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PREPARATORY COMMISSION FOR THE
INTERNATIONAL SEABED AUTHORITY
AND FOR THE INTERNATIONAL
TRIBUNAL FOR THE LAW OF THE SEA

REPORT OF THE PREPARATORY COMMISSION, UNDER PARAGRAPH 11 OF RESOLUTION I OF THE THIRD UNITED NATIONS CONFERENCE ON THE LAW OF THE SEA, ON ALL MATTERS WITHIN ITS MANDATE, EXCEPT AS PROVIDED IN PARAGRAPH 10, FOR PRESENTATION TO THE ASSEMBLY OF THE INTERNATIONAL SEABED AUTHORITY AT ITS FIRST SESSION

VOLUME VIII

Working papers of Special Commission 1
(LOS/PCN/SCN.2/Add.6 to LOS/PCN/SCN.1/WP.15)

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LOS/PCN/SCN.1/WP2/Add.6
28 February 1989

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PREPARATORY COMMISSION FOR THE
INTERNATIONAL SEABED AUTHORITY
AND FOR THE INTERNATIONAL
TRIBUNAL FOR THE LAW OF THE SEA
Special Commission 1

BASIC DATA AND INFORMATION OF RELEVANCE TO THE WORK OF SPECIAL COMMISSION 1

Recycling of copper, nickel, cobalt and manganese: Additional information

Background paper by the Secretariat

I. INTRODUCTION

1. In view of the importance of the issue of recycling with respect to copper, nickel, cobalt and manganese, it was studied by Special Commission 1 on the basis of a background paper prepared by the Secretariat, LOS/PCN/SCN.1/WP.2/Add.4. Due to lack of available data on recycling of cobalt and manganese and scarcity of data on recycling of nickel, that paper dealt primarily with recycling of copper, although recycling of the other metals was touched upon. Special Commission 1, then, requested the Secretariat for further data and information on recycling of the four metals concerned, with emphasis on nickel, cobalt and manganese. However, despite all efforts by the Secretariat, no systematic world-wide time-series data on the latter three metals could be obtained. The best that can be achieved is to continue collecting piecemeal data from diverse sources so that over time a somewhat coherent data set could be accumulated. In the meantime, in response to the request of the Special Commission, this background paper has been prepared providing additional information on recycling of the four metals concerned. Section II discusses the current situation with respect to recycling of the four metals, Section III provides information on the major prospects for changes in the recycling pattern in the future, and Section IV presents a summary of the paper.

II. CURRENT PATTERN OF RECYCLING

2. Changes in demand for metals and alloys, in fabrication techniques, and in the technology for scrap identification and refining have led to a number of significant developments in the use of recycled metals over the past decade. Economic and environmental pressures to reduce waste have grown over the past decade and are likely to further change the relationship between primary and recycled metals.

3. Scrap, both from the production and fabrication processes and from obsolete products, is an obvious source of metal. Scrap has been used from the earliest days of primitive metallurgy to the present. But the use of scrap varies from metal to metal and from application to application. The use of scrap is determined by a range of factors, including the availability and quality of scrap, price, cost of processing, purity requirements, technology, user standards, and government regulations. The current patterns of recycling are described below for copper, cobalt, nickel, and manganese.

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A. Copper

4. Unlike some other metals, it is technically and economically feasible to process copper scrap to produce a meterial that is as high in purity as primary metal obtained from copper ore. Further, the recycling of copper scrap has been a principal source of copper, and secondary copper has been accepted without stigma by all major consumers. Many of the uses of copper are in products that have substantial copper content of relatively high purity, which contributes to the availability of scrap copper upon the obsolescence or disposal of those products.

5. As a result of the feasibility of recycling copper and the availability of a large amount of scrap, a major industry exists for the recycling of copper scrap, and secondary copper forms a substantial fraction of the copper that is used in industry.

6. Copper scrap is divided into many categories by the recycling industry, but four categories encompass the bulk of copper scrap. Number 1 wire and heavy copper consists of high purity copper (99 per cent or greater) and low contamination; number 2 wire, and mixed heavy and light copper have high copper content (92 to 96 per cent); yellow brass has a copper base and averages about 65 per cent copper; and low grade scrap and residue has relatively low value due to low copper content and high levels of contaminating materials.

7. Copper scrap is obtained from both fabricators (prompt industrial scrap) and from scrap collectors (old scrap). Scrap from fabricators is returned for recycling quickly, but old scrap is not available until the products reach the end of their life. In the cases of some products, the useful lifetime is quite long: wire and tubing may be used for 45 years, brass for 30 years, auto radiators for 12 years, and magnet wire for 10 years. As a result, the supply of old scrap is determined to a major degree by the use of copper decades in the past.

8. One major source of supply of copper scrap will decline in the next decade. Over the past 10 years the copper automobile radiator has been replaced by the aluminum radiator. As time passes there will be fewer and fewer cars entering dismantling yards that have copper radiators. This decline could be offset by the increasing copper content of the on-board electrical and electronic systems, but this copper is mixed with insulation and is spread throughout the automobile making recovery difficult. As a result it can be anticipated that copper recycled from automobiles will decline over the next ten years.

B. Nickel

9. Nickel is principally used as an alloying element in stainless and alloy steels and in superalloys. In the United States about one quarter of demand is met by recycled nickel. About one third of the nickel recovered from scrap comes from obsolete products.

10. Stainless and alloy steel. The yield of fabrication processes - the fraction of input metal that actually is contained in the finished component - is less than 60 per cent for stainless and alloy steel fabrication. 1/ Of the 40 per cent that is available for recycling, about one third is lost due to inadequate separation from other scrap.

11. Nickel alloys generally have high temperature resistance. While this can be a desirable property in an alloy, it makes the separation of nickel alloys into their constituent elements difficult. As a result nickel bearing scrap is generally recycled within its particular class (i.e. stainless steel scrap to stainless steel, alloy steel scrap to alloy steel). Stainless steel,

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being easier to identify than alloy steel, is recovered to a greater degree than alloy steel.

12. The production of stainless steel results in quantities of nickel bearing dusts, trimmings, and other waste. Prior to 1982, these materials were not recycled; in 1982 an INCO subsidiary, INMETCO, began operation of a plant that processes stainless steelmaking waste to produce a nickel-chromium alloy suitable as feed for further production of stainless steel. The operation of this plant is based not only on the economics of the nickel market but also on the costs of waste disposal. The implications of this combination of economic and environmental incentives are discussed in section III below.

13. Superalloys. After stainless steel, superalloys are the largest consumer of nickel. Most superalloys are based on nickel, with chromium, iron, cobalt and other elements added to obtain the desired properties. Even in cobalt-based alloys nickel is a major constituent.

14. Superalloys are used in jet engines. Jet engine components are produced through a series of fabrication steps that remove large fractions of the original metal as trimmings, turnings, dusts, and other scrap and waste. The ratio of metal entering the fabrication process to that contained in the product is referred to as the "buy-to-fly" ratio. For nickel in jet engine components the "buy-to-fly" ratio is as great as 7 to 1. However, the loss of nickel is not as great as that for cobalt. This is because the scrap that is collected while not acceptable for recycling in critical superalloy applications, is used as a high nickel scrap for the production of stainless and alloy steel. In these applications the superalloy scrap reduces the need for primary nickel in the steel industry.

15. In spite of the increased potential for recycling nickel from superalloy scrap, there is still a significant amount of nickel lost to waste. Changes in waste recycling depend upon two advances in technology: more efficient manufacturing technology and new technologies for waste recycling resulting from incentives. Both topics are discussed in section III below.

C. Cobalt

16. The major uses of cobalt are in superalloys and speciality steels, carbide tools, magnetic alloys, and paints and chemicals. The cobalt contained in paints and chemicals (about one third of cobalt consumption) is virtually impossible to recover because it is widely disseminated, difficult to collect, and diluted with other elements. In contrast, the metallic uses of cobalt present significant opportunity for recycling.

17. Superalloys. High temperature alloys for jet engine are the largest consumer of cobalt. Alloys for these applications are required to be of the highest quality. Generally, specifications for superalloy components will limit or prohibit the recycling of superalloy scrap for the production of critical engine components, although improved processes for refining scrap have broadened the range of applications in which scrap may be used. As in the case of nickel, in the fabrication of jet engine components a considerable amount of cobalt scrap and waste is generated. For cobalt in a high performance engine the "buy-to-fly" ratio can be greater than 6 to 1. 2/ When it is possible to segregate the scrap by type and when specifications do not prohibit the use of scrap, some of the fabrication scrap may be reprocessed. The remainder is either sold as scrap, where it will be reprocessed principally for its nickel and chromium content, or it will be disposed of as waste.

18. Technology for recovering high purity cobalt from superalloy scrap has been developed. Recycling of cobalt from superalloy scrap, while technically

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are beingfeasible, is dependent upon economic conditions. For the near future, and while cobalt prices remain at or near their current levels, these advanced recycling processes will see only limited use. Should prices increase sharply, however, recycling technologies could be implemented that would provide an alternative source of high purity cobalt.

19. Carbide tools. Cobalt is critical to the production of cemented carbide tools for the cutting and machining of metal. Cobalt serves as the binder for fine particles of tungsten carbide. Substantial quantities of cobalt are recovered from used cutting tools. Cobalt recovery increased greatly during the late 1970's, but this was due to the improvement of processing technology rather than the temporary increase in price. 3/

20. Other applications. Cobalt is used in catalysts in petroleum processing plants. Catalysts are recycled several times before they become too contaminated for further use. When cobalt prices were at their peak there was interest in processing catalysts for their cobalt and other metal content, but the return to lower prices discouraged such development.

D. Manganese

21. Manganese is the second most prevalent alloying element in steel (carbon is the first). A ton of steel averages 13.8 pounds of manganese in the final product, with an additional 21.8 pounds constituting slag, dust and waste (see Figure 1). Of the nearly 36 pounds of manganese, almost 12 pounds are contained in the iron ore that begins the steelmaking process, with only about 2 pounds of manganese ore being added at the ironmaking stage. About 3 pounds is contained in scrap that is added in the raw steel making stage, and almost 16 pounds is added as ferromanganese during the refining stage.

22. Since over 60 per cent of the manganese that enters the steelmaking process leaves as slag, waste or dust, there appears to be a great opportunity for recycling. In fact, considerable research has been conducted on the potential to recover manganese from slag. Although such processes are technically feasible, they cannot compete with the low prices charged for manganese ore. There is some recycling of slag in the ironmaking stage, but this is limited to a small amount and is done principally to recover iron, lime, and flux content with manganese being an added benefit.

23. As a constituent of steel, manganese is recycled whenever steel is recycled in the steelmaking process. The growth of the use of the electric arc furnace and the development of steel "mini-mills" that use a high percentage of scrap steel as their feedstock have the effect of recycling manganese in parallel with the recycling of steel (mini-mills may operate on a feed consisting entirely of scrap), while the basic oxygen furnace used in conventional steelmaking may contain only 30 per cent scrap in its feed material.

III. MAJOR PROSPECTS FOR CHANGES IN RECYCLING PATTERN

24. The flow of materials from the production of raw material, through the processing of alloys and the fabrication of components, on to the disposal of obsolete products provides a number of opportunities for conservation and recycling. The flow of materials through the processing and fabrication stages is illustrated in Figure 2.

25. As can be observed from Figure 2, flow of primary and secondary metal is combined as input to the melted charge of the alloy producer. The charge is cast into shapes, and home scrap (which consists of the solids and turnings that are generated during the fabrication of raw alloy stock) is returned to the melt. Small amounts of grindings and mixed scrap are not returned for

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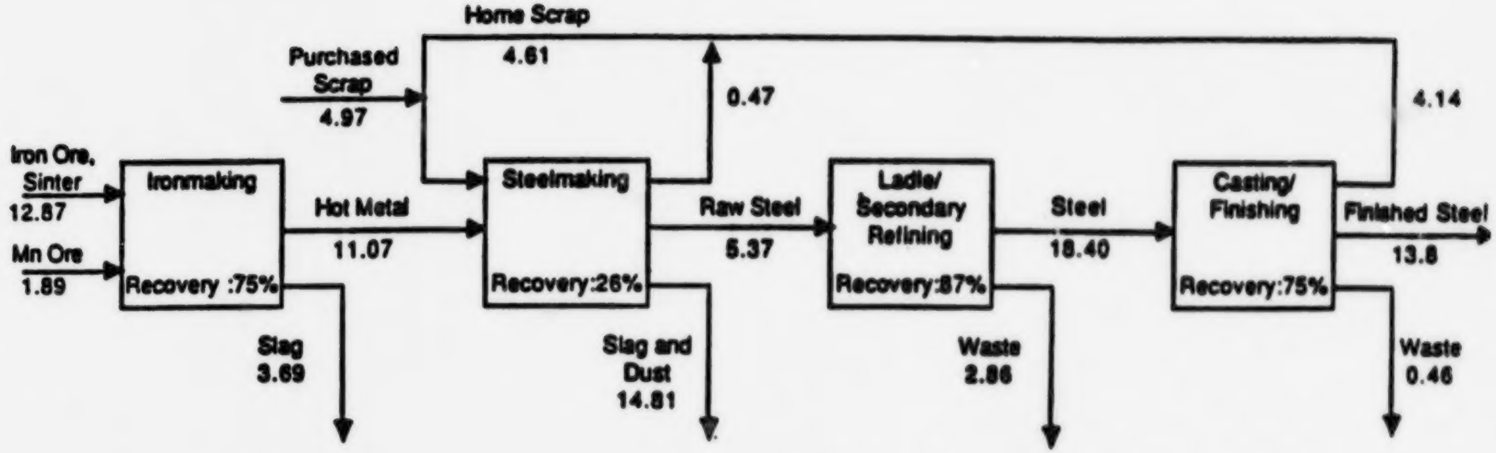
Home Scrap
4.61
Purchased Scrap
4.97
0.47
4.14
Iron Ore, Sinter
12.87
Mn Ore
1.89
Ironmaking
Recovery :75%
Hot Metal
11.07
Steelmaking
Recovery:26%
Raw Steel
5.37
Ladle/ Secondary Refining
Recovery:87%
Steel
18.40
Casting/ Finishing
Recovery:75%
Finished Steel
13.8
Slag
3.69
Slag and Dust
14.81
Waste
2.86
Waste
0.46

Figure 1. Flow of Manganese in the Steelmaking Process
(pounds of manganese per ton of finished steel)

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reprocessing and are recovered for use as scrap, although in this case the material is downgraded and the value of some of the metals contained in the material may be lost. In addition, some metal waste produced during the production of alloy shapes is lost as dust and contaminated waste that is disposed of and the contained metal is lost.

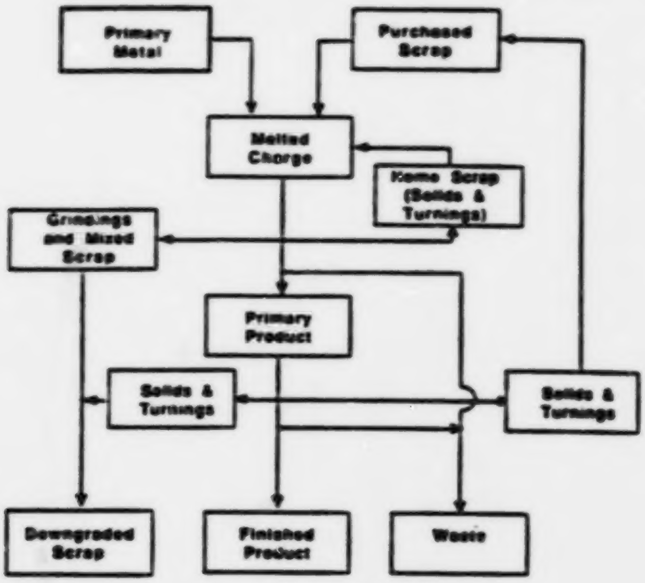

Figure 2. Material flow in the processing and fabrication stages

26. The fabrication stage is the stage where alloys are formed into useful shapes and assembled into products. The processes used in this stage can result in large quantities of metal being mechined away to become scrap or waste. In some processes the ratio of metal entering the fabrication process to the metal contained in the final product can be 10 to 1 or greater. In such cases the metal that does not go into the final product may be recycled, it may be downgraded so that some, but not all, of its constituent elements are recycled, or it may be lost to waste.

27. This review of the flow of materials through the processing and fabrication cycle shows several areas where there is the potential of conservation and recycling. The processing stage, where home scrap is extensively recycled, can be made more material-efficient by reducing the materials lost to waste. The fabrication stage, with its high input to output ratio, has great potential through reducing the losses due to extensive machining and its resulting production of dust, contaminated scrap and other waste which is either lost or causes downgrading of scrap. The processing of old or obsolete scrap may also contribute to increased secondary metal supplies, thereby reducing the primary metal required for a specific output of alloy for the fabrication stage. There are a number of possibilities for the recycling pattern to change in the future. Few of the most prominent cases are described below.

A. Cobalt and Nickel in Superalloys for Jet Engines

28. Alloys that can withstand the high temperature, high stress and corrosive environments of jet engines, commonly known as superalloys are the largest consumers of cobalt and the second largest consumers of nickel. Most superalloys have nickel as their major constituent, with other metals added to produce the desired properties. Cobalt is an important component of alloys designed for the most demanding conditions of temperature and stress, and in some alloys cobalt is the dominant element with nickel as an alloying element.

29. The manufacture of jet engine components from superalloys is a complex series of processes. The alloy may be cast or pressed into shapes which are then machined to their final form. The process of fabrication has been extremely inefficient in the use of materials with ratios of 10 to 20 to 1 of purchased metal to metal in the final product. Shavings and scrap from the fabrication process are recovered and returned for processing, but often the scrap is considered to be of lower quality and not processed to recover the cobalt contained in it.

30. In the past five years there have been several significant developments in fabrication technology that are changing the demand for new metal for superalloys, and there is potential for continued savings as the fabrication technologies continue to improve.

31. Casting technology for superalloys. Casting technology has advanced to allow the casting of large components as a single piece instead of requiring the assembly of a number of smaller components, resulting in significant savings in scrap and waste. Material savings have also resulted from special casting techniques developed to produce parts with special crystal structure. Directional solidification, where crystals form along the length of a turbine blade, and blades cast as a single crystal use less metals, and thus reduce scrap and waste.

32. Forging technology. Even more significant savings have occurred in parts that are fabricated by forging. Forging is the mechanical formation of a piece of material into the desired shape. Forging can strengthen many alloys, as well as reduce in the original metal stock.

B. Environmental Factors Leading to Increased Recycling: Recovery of Nickel from Stainless Steel Production

33. Increased recycling may be influenced by factors other than the relative costs of primary and secondary metal. Increasing concern over environmental issues in some industrialized countries has resulted in regulations that have led to increased recycling as a means of reducing the production of hazardous or toxic waste that would otherwise be subject to costly disposal.

34. One important example is the disposal of wastes from the production of stainless steel. In the stainless steel making industry, scrap produced in the production process is either recycled as home scrap or it is lost as waste. Wastes include trimmings, slags, dusts and other materials that may be low in metal content or potentially contaminated by other materials. Prior to 1978 there was no economic process to recover the flue dust, mill scale, and grinding swarf of stainless steel production plants. On a purely economic basis there was little incentive to do anything other than dispose of the waste.

35. Chromium in stainless steel wastes can form several toxic substances. When regulations requiring special treatment for these wastes were formulated the costs of disposal increased considerably. INCO, a major nickel producer, began investigating alternative approaches to deal with the problem. INCO's research resulted in a process that treats low-grade steel making waste and recovers a product suitable for sale to steelmakers. The first plant, opened in 1978, had a capacity to process 47,000 tons of waste per year, producing 25,000 tons of metal containing 2,000 tons of nickel. This product is suitable for processing into some of the 300 series stainless steel (the most popular stainless steel).

36. Other waste treatment processes have been developed for other steelmaking wastes, and these too may recover nickel and other metals. Wastes from the chemical industry, metal plating shops and other industries could also become a source of metal. The decision to build and operate such plants

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will be dictated more by environmental regulations than by the economics of the markets for nickel and other metals. However, since the sale of metal products can improve the economics of waste treatment plants the recovery of these metals is a likely by-product of increasing regulation of the disposal of harmful waste. It should be noted, nevertheless, that the recovery of metal from steelmaking waste is likely to remain limited to several thousand tons.

C. Future Steel Making Technology

37. The principal use of manganese is in the production of steel and steel alloys. Manganese is used in steel to obtain a number of properties, including control of sulfur for improved workability, enhanced hardenability, and wear resistance. Since manganese is not produced as a primary product, prospects for recycling and conservation depend almost entirely on the practices of the steel industry. As a result of changing practices in steelmaking and in consumer demand, future demand for manganese per ton of steel produced will probably decline over the next 10 to 20 years.

38. One factor leading to recycling and conservation of manganese is the electric arc furnace. Retention of manganese in raw steel is higher with the electric arc furnace than with the basic oxygen furnace used in most of the steel industry. With electric arc furnace steel mills increasing their share of the market, this increase in efficiency will mean less requirements for manganese additions in the refining stage. Improvements in the operation and design of the basic oxygen furnace will also increase the retention of manganese - possibly increasing from about 25 per cent to between 40 to 60 per cent.

39. Increasing demand for refined steel is leading to increased use of ladle and secondary refining. As a result, oxygen and sulfur levels are being reduced and, in turn, the requirement for manganese additions at this stage are also reduced. Further, the increased control over the alloy content resulting from ladle metallurgy allows the steelmaker to control more precisely the additions of manganese and avoid adding more manganese than is necessary for each steel composition.

40. In 1982 approximately 39 per cent of the manganese used during the overall steelmaking process (see Figure 1) was retained in the final product. The net effect of the combined improvements in steelmaking technology and operating procedures is estimated to increase the retention rate to between 44 per cent and 54 per cent. 4/

41. Table 1 summarizes the potential reductions in inputs of manganese to the steelmaking process. Declining manganese content of iron ore contributes to the reduction of manganese input from iron ore and sinter, as does the growing role of electric arc furnaces and the attendant decrease in the use of iron and the increase in the use of scrap. An increase in the contribution of manganese from scrap is also due in part to the increasing role of the electric arc furnace in the steel industry. Reduction in the addition of manganese ferroalloys results from the greater retention of manganese during the production of raw steel and from the use of ladle metallurgy and secondary refining to deoxidize and desulfurize steel, which in turn reduces the amount of manganese needed to produce the desired properties.

D. Copper in the Electric and Electronics Industries

42. The increasing role of electronics requires a continuing use of copper for electrical and electronic products. The modern automobile, for example, contains copper in its wiring system, in the windings for starters and alternators, in the dials and gauges of instruments, and in the growing number

of computer components that control a number of factors from the fuel mixture to the air temperature.

Table 1. Past and projected use of manganese in U.S. steel production (Figures in pounds of manganese per ton of steel product)

		Projected for Year 2000		
	1982	Expected	Low	High
Manganese ore	1.9	1.2	1.0	1.5
Manganese ferroalloys	15.9	8.3	5.5	12.2
Iron ore and sinter	12.9	8.5	7.1	10.1
Purchased ferrous scrap	5.0	6.8	6.6	6.9
TOTAL	35.7	24.8	20.2	30.7

43. The high amount of copper contained in consumer products such as automobiles implies a significant change for the role of secondary copper in the copper markets of the future. Copper is used in many applications where, upon product obsolescence, it is easy to identify and recover. The largest uses of copper - wiring for power and telecommunications systems, plumbing systems in buildings, in-plant equipment, equipment in power utilities - provide large and readily identifiable source of copper scrap when they end their service life. By contrast, copper in consumer electronics is mixed with vast quantities of other materials, both metals and non-metals, and the products may be spread over large areas or disposed of in municipal waste.

44. Recycling copper from electronic products will require large scale systems for the separation of waste, the identification of copper, and the recovery of the copper in a cost effective manner. The economics of such processes will not be dictated by the recovery of metals (gold, silver and platinum group metals are also contained in electronic copper) alone. Financial incentives may come from the recovery of other scrap and from the production of energy from waste materials. Regulations on the disposal of waste rather than purely economic considerations may require the construction of waste disposal facilities.

IV. SUMMARY

45. The driving factors for the increased importance of recycling and conservation in the metal markets will be performance and environmental protection. Only in the event that prices for a metal experience a dramatic increase (as did cobalt prices in 1979) will new recycling technologies be instituted solely based on the economics of scrap recovery and processing.

46. The quest for increased performance will have its greatest effect on metal demand in the aircraft engine market. Manufacturing technologies designed to reduce the number of fabrication steps will also reduce the amount of machining and, thereby, the production of waste and scrap. Reduction of waste will have a direct effect on the reduction of metal demand by the industry. However, reduction of scrap could actually increase the demand for nickel in industries that now use superalloy scrap as a feedstock to their

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alloys, but this will have little effect on the demand for cobalt since decreased superalloy scrap generally becomes a feedstock for alloys that require nickel and give no special value to the cobalt content.

47. Major increases in the price of cobalt or nickel could lead to implementation of new processes for the recycling of superalloys. Such recycling processes were developed in the aftermath of the disruptions of the cobalt market in 1979, but with the return of the market to reduced and stable prices the pressure to implement those processes was removed. The technology is "on-the-shelf" however, and could be implemented in a short period if needed.

48. Environmental regulation will lead to increased recycling. Stainless steelmaking waste is already recycled, with significant recovery of nickel that used to be lost previously. Regulation of the disposal of hazardous waste will likely increase the production of metal from waste as a means to improve the economics of waste treatment.

49. Another environmental consideration will involve the obsolete automobile. The retirement of automobiles at the end of their useful life produces millions of junk automobile bodies each year. Environmental pressure is building to deal with the increasing bulk of obsolete cars. Changes in the composition of automobiles to a complex mixture of steel, aluminum, copper, zinc, composites, and plastics prevent the direct use of automobiles as feed material for steelmaking. Improved technology to shred automobile and separate the resulting scrap will lead to increased recycling of steel, aluminum and other metals, including nickel and copper.

50. Steelmaking, as the major market for manganese, will see a reduction in intensity of use of manganese due to a combination of improved steelmaking technology and changes in the demand for alloys that contain less manganese. Increased recycling of steel scrap will result in a similar recycling of the manganese contained in the steel scrap.

Notes

1/ Scott F. Sibley, "Nickel" in Mineral Facts and Problems, United States Bureau of Mines, 1985, p. 543.

2/ M. M. Allen, D.S. Halfpap, and M.A. Siegal, "Manufacturing developments to reduce strategic materials usage," in Materials Substitution and Recycling, Advisory Group for Aerospace Research and Development Proceedings No. 356, 9-14 October 1983. As an example, production of the F100 jet engine required 885 pounds of cobalt of which 142 pounds was contained in the engine and the rest constituted scrap and waste.

3/ Office of Technology Assessment, Congress of the United States, Strategic Materials: Technologies to Reduce U.S. Materials Import Vulnerability, 1985, p. 24.

4/ G.R. St. Pierre, et al, Use of Manganese in Steelmaking and Steel Products and Trends in the Use of Manganese as an Alloying Element in Steels, Congress of the United States, 1983.

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22 February 1989

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PREPARATORY COMMISSION FOR THE
INTERNATIONAL SEA-BED AUTHORITY
AND FOR THE INTERNATIONAL TRIBUNAL
FOR THE LAW OF THE SEA
Special Commission 1
Seventh session
Kingston, Jamaica
27 February-23 March 1989

BASIC DATA AND INFORMATION OF RELEVANCE TO THE WORK OF SPECIAL COMMISSION 1

Background paper by the Secretariat

Addendum

Substitution and the copper, nickel, cobalt and manganese industries

INTRODUCTION

1. Since substitution can have a significant impact upon the copper, nickel, cobalt and manganese industries, the Secretariat was requested by Special Commission 1 to prepare a background paper on the substitution of those metals by other metals or materials and vice verse. The present paper is intended to respond to that request. Section I discusses the current situation with respect to substitution for and by those metals; section II provides information about future substitution potentials in certain key end-use sectors; and section III presents a summary of the paper.

2. Substitution takes several forms: direct substitution of one metal for another; substitution of an "engineered" material that incorporates design, fabrication techniques and materials properties for a conventional metal; and substitution of a new technology with different material requirements in place of an older technology that requires a metal. All three forms of substitution may

affect the four metals concerned. The possibilities for substitution vary by metal and by application, and the actual use of substitutes will be affected by technical and economic factors.

I. CURRENT OUTLOOK

3. Each of the four principal metals contained in polymetallic nodules is subject to substitution by alternative metals or materials in some applications. The current outlook varies from metal to metal, and is described below in brief.

A. Copper

4. Copper is a relatively abundant metal that is easy to process and fabricate and has widespread applicability. Its high thermal and electrical conductivity has led to its use in heat exchangers, power transmission, communications wiring and electric appliances. Alloyed with zinc or tin, copper is used as an easy-to-form structural material.

5. Copper today faces intense competition from aluminium in several areas. Aluminium is a relative new-comer to the world metals market. When it was first introduced in the nineteenth century it was so costly to produce that it was considered a precious metal. However, advances in processing technology and the decrease in the relative cost of electric power have reduced the cost of production of the metal to the point where it can compete with copper in several large segments of the market. Aluminium is a good thermal and electrical conductor. While it is not as conductive as copper, its lower weight gives it an advantage in some applications (e.g., automotive radiators and electric power transmission lines), and it competes on a cost basis in such applications as electrical transformers and home wiring.

6. Copper has many uses where its resistance to corrosion makes it attractive. Copper alloys are used in ships and other ocean equipment (e.g., oil rigs), in desalinisation plants and in some chemical processing facilities. Copper has long been used in building and construction (e.g., roofing, downpipes, and hot- and cold-water pipes), but there has been growing competition from non-metallic materials in some of these applications. For example, hot- and cold-water pipes and fittings made of copper are being replaced by polyvinyl chloride (PVC).

7. Fabrication technology also is a major factor in the substitution of copper by other metals/materials, primarily by aluminium. Until recently, virtually all automobiles used radiators made of copper as part of their cooling system. High thermal conductivity and ease of fabrication made copper the preferred material for radiators. The pressure to reduce automobile weight in the late 1970s and early 1980s led producers to seek lighter-weight components, and the radiator was one area under consideration. Aluminium, also a good thermal conductor, could save weight, but fabrication techniques, which were considerably more involved than for copper, had kept aluminium from competing with copper in this application. However, as pressure increased to reduce the weight of automobiles, auto

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manufacturers and aluminium producers put more effort into developing new techniques for cost-effective fabrication of the metal. Two approaches were developed, leading European auto manufacturers to begin using aluminium radiators in the 1970s, and a nearly complete change-over world-wide from copper to aluminium is expected by 1990.

B. Nickel

8. Over 90 per cent of the nickel consumption is in the production of some form of metal alloy. Nickel alloys fall into several principal groups. Stainless steel, which averages about 8 per cent nickel content, is the largest class of nickel alloy. Super-alloys, which either have a nickel base or contain nickel as a major alloying element, are heavy users of nickel. Some high-strength alloy steels contain about 9 per cent nickel, as do other alloy steels developed for use in cryogenic applications. High-strength low-alloy (HSLA) steels contain between 0.5 and 2 per cent nickel. Nickel is also alloyed with copper to produce corrosion-resistant alloys that are used in marine applications, food processing, and some chemical processing facilities.

9. Stainless steel. Nickel is an essential component in stainless steel, and comprises approximately 8 per cent of the weight of most grades of stainless steel. In the 1950s, efforts were made to develop stainless steels with lower nickel content. Through the addition of approximately 6 per cent manganese, it was possible to reduce the nickel content from 8 per cent to 4 per cent. These stainless steels have properties similar to the 300 series and can be produced at a slightly lower cost. However, because of consumer satisfaction with the 300 series and the lack of a compelling economic reason for change, it is not clear how widely these new types of stainless steels would replace the conventionl stainless steels. None the less, the potential for their manufacture and use remains in the event that nickel prices rise or the continued availability of nickel seems uncertain.

10. Cryogenic steels. Nickel is a constituent (up to 9 per cent) in cryogenic steels, with nickel content increasing to achieve lower operating temperatures. One aspect of the interest in the commercialization of superconductive materials is that greater use will be made of liquefied gases at cryogenic temperatures. This is likely to result in an increase in the use of cryogenic steels, both for the production and storage of cryogenic materials and for the structure of systems designed to operate at those temperatures.

11. High-strength low-alloy steels. Nickel is a component of many alloy steels and HSLA steels. In HSLA steels, nickel content may range up to 2 per cent. HSLA steels accounted for almost 5 per cent of steel demand in the United States of America in the early 1980s and this is projected to grow to 9 per cent by 2000. The growth of demand for HSLA steels is significant for future nickel demand.

12. Nickel imparts to alloys properties of corrosion resistance and toughness. These qualities make it attractive for use in the machinery and storage facilities that are used in chemical plants and refineries. Large industrial facilities are

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heavy consumers of steel (including nickel alloy steels), and there is no substitute that combines the necessary properties and relatively low cost.

13. It is possible to achieve the property of corrosion resistance through coatings or surface treatment of alloys with little or no nickel. Automobile manufacturers increasingly use zinc and nickel-zinc coatings to improve the corrosion protection of their products. Nickel plating or layers of nickel alloy may be applied to steel to improve its corrosion resistance. However, surface treatment or coating operations add to the cost of the material and require special fabrication techniques to protect the surface treatment from damage. Corrosion resistance that is limited to a thin surface layer is not sufficient to protect components that are subject to severe abrasion or surface damage; these applications therefore will continue to use stainless steel and other alloys containing significant amounts of nickel.

14. The use of nickel is closely related to the use of steel, but changes in the product mix are likely to cause nickel demand to increase more rapidly than steel demand. There are some projections that the mix of steel products would move away from basic carbon steel to alloy, HSLA and stainless steel (see table 1); however, the mix of steel products shown in table 1 could change significantly if aluminium alloys, plastics and composite materials are used to a greater extent in automobiles at the expense of HSLA steel.

Table 1. Market share in the United States by class of steel

(Percentage)

	Market share	
Product	1982	2000
Carbon	87.6	80
Full alloy	6.1	9
HSLA	4.8	9
Stainless	1.5	2

Source: Office of Technology Assessment, Congress of the United States, Technologies to Reduce U.S. Materials Import Vulnerability, 1985.

15. Superalloys. Nickel-based superalloys are the work-horse of the aircraft jet engine. While it is possible to substitute one superalloy for another in some applications, there is no possibility to make significant reductions in nickel consumption in jet engines through substitutions by alternative superalloys. The development of new structural materials based on advanced materials processing

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techniques may change the requirements for nickel, but it is also possible that the new materials may increase requirements for nickel rather than decrease them. It will be several decades before non-metallic materials can replace metals in the roles now filled by superalloys. Advanced ceramics and composites hold the potential to extend the performance of the jet engine, but major advances are needed before these materials can provide the performance and reliability required by the aviation industry.

16. Superalloys and high-nickel alloys are not limited to use in the aerospace industry. In fact, the potential exists for increased use of nickel through the substitution of high-nickel superalloys in place of stainless steels in highly corrosive environments found in refineries, paper mills, fossil fuel power plants and waste incinerators. The exploitation of oil and gas can involve highly corrosive liquids. High-nickel (up to 30 per cent) alloys and superalloys are being used increasingly for these applications. Cobalt may also be used in these applications; one new alloy designed for these markets (alloy HR-160) contains 27 per cent cobalt.

C. Cobalt

17. Cobalt is a valuable raw material for the production of components for jet engines, for magnets and magnetic materials and for the binder that holds carbine tools together. Until the market price rose unpredictably in 1979 and consumers became concerned about the possible interruption of supplies, little effort was devoted to identifying substitutes for cobalt-bearing materials. Cobalt was used in applications where its properties gave performance benefits over other metals, and generally the cost of cobalt constituted a very small portion of the total cost of products so that there was little commercial incentive to seek substitutes.

18. Superalloys. One of the most critical uses of cobalt is as a constituent of the alloys used in the high-temperature regions of jet engines. In 1980, approximately 41 per cent of United States consumption of cobalt was for the production of superalloys. Early superalloys were based on iron and nickel, but as operating temperatures and stresses continued to increase, new alloys were developed that used additions of cobalt to strengthen the alloys by affecting the boundaries between individual grains of the alloy. Cobalt-bearing alloys range from a few per cent to up to 60 per cent cobalt content, and they are used most often in high-performance engines in the high-stress rotating components.

19. It is necessary to combine alloys and processing methods to achieve the properties desired for specific components. Dozens of superalloys are used in jet engines, with cobalt content ranging from zero to 60 per cent (see table 2). The experience gained in working with so many alloys provides a basis for selecting substitute alloys when necessary. For example, when concerns arose about the possibility of supply interruptions, many consumers began to consider the use of alloys that did not contain cobalt or had low cobalt content. First actions were the direct substitution of superalloys with low cobalt content by cobalt-free superalloys for which there was already a basis of experience. For example, cobalt-free Inconel 718 was used in place of Waspaloy (13 per cent cobalt

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content). This was feasible because Inconel 718 had already been subjected to the exacting qualification process.

Table 2. Structural alloys used in high-temperature jet engine components

Alloy	Nickel %	Cobalt %	Processing method
MA-754	78	-	Oxide dispersion strengthened/forged
Alloy 454	62.5	5	Single crystal
MAR-M200	60	10	Directional solidification
MAR-M247	60	10	Conventionally cast or directional solidification
B-1900	65	10	Directional solidification
MAR-M509	10	55	Conventionally cast
X-40	10.5	56	Conventionally cast
Rene-80	60.5	9.5	Conventionally cast
IN-713	72.5	-	Conventionally cast
Rene-77	55	15	Conventionally cast

Source: Richard C. H. Parkinsen, Substitution for Cobalt and Chromium in the Aircraft Gas Turbine, Office of Technology Assessment, Washington, D.C., 1983.

20. The process of testing an alloy and approving it for use in aircraft is long and expensive, taking several years and costing several million dollars. New alloys that used less cobalt followed two trends: enhancement of traditional nickel-based superalloys and the development of new fabrication techniques that changed the grain structure of alloys to reduce the problems for which cobalt had been introduced.

21. Laboratory research suggests that superalloys with reduced cobalt content could substitute for current alloys with the potential to reduce cobalt demand for jet engines by up to 50 per cent. However, each alloy would require expensive and time-consuming testing, and these costs are not likely to be accepted unless consumers are concerned about increases in cobalt prices or severe supply shortages. Without such incentives, the use of substitute alloys will be driven by a search for improved performance rather than a concern for cobalt content.

22. Magnetic materials. Certain cobalt alloys exhibit strong magnetic characteristics, leading to the use of these alloys in consumer products such as loudspeakers and in instruments and meters. Magnetic materials accounted for about 15 per cent of United States cobalt consumption in 1980, second only to superalloys.

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23. While cobalt alloys are preferred for many applications, their use is not essential. Ceramic magnets, made from iron oxides, can substitute for cobalt alloys in many applications. Ceramic magnets are generally of lower cost than cobalt alloys, but they are weaker and must be substantially larger to give the same magnetic strength. This requirement for increased size means that products must be redesigned before substitution can be made. This was shown in the late 1970s when prices for cobalt underwent a steep rise and there was uncertainty about its availability. Products were redesigned to use ceramic magnets, made from iron oxides. Substitution was particularly heavy in loudspeakers. Once these design changes were made, the ceramic magnets gained a strong foothold in the market and were able to compete with the higher-cost cobalt alloys.

24. New magnetic alloys, often based on cobalt, have been developed. These alloys have up to 10 times the magnetic strength of the older alloys. The increased strength has opened new markets for magnetic alloys. Stronger magnetic materials based on alloys of cobalt and rare earths, such as cobalt-sumarium, developed new markets for small but powerful miniature speakers and for a variety of fasteners. Recently new alloys that form even stronger magnets have been developed. However, some of these alloys, such as iron-neodynium-boron, use little or no cobalt and are expected to decrease in cost to become less expensive than cobalt alloys. Cobalt will face competition in this area in the future as these newer alloys, containing little or no cobalt, are developed.

25. Tool steels and cutting tools. Cobalt serves in two important roles in the metal fabrication industry. Cobalt alloys, with their high-temperature strength, are used in cutting tools, where they retain their strength and their sharpness at high cutting speeds and for long periods. The second use is as the binder for carbides in cemented carbide tools. There is some potential for substitution by alloys with reduced cobalt content, but without the pressure of price increases or supply shortages the substitution may not occur.

26. Cemented carbides are made of particles of tungsten carbide bound together by cobalt. Although nickel or iron could substitute for cobalt, these metals have much less desirable properties so that substitution is likely to occur only when supplies are extremely restricted.

D. Manganese

27. Manganese is an essential element in the production of iron and steel. While there are only limited prospects for substitution of other materials for manganese in the steel-making process, the future market for manganese will be affected by the growth of steel demand. Steel, in turn, is subject to competition from other materials.

28. Manganese requirements in the production of steel are likely to decline through the substitution of new steel-making technology. Sulphur contained in coal and coke is invariably introduced into the production of steel. The sulphur can form iron sulphide, which weakens the steel. In order to prevent this, manganese is introduced to tie up the sulphur in manganese sulphide, which is not harmful to

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the properties of steel. There is a continuing trend, however, towards the production of steel with lower levels of sulphur. Through the injection of calcium carbide or magnesium metal into the hot iron, the level of sulphur in the metal entering the steel-making stage is reduced, thereby reducing the need for manganese. Manganese content of steel (all classes) is projected to decline from 0.69 per cent to 0.61 per cent, a reduction of about 12 per cent.

II. SUBSTITUTION POTENTIAL IN KEY CONSUMING INDUSTRIES: SEVERAL CASE STUDIES

29. Substitution is not a simple process of replacing one material by another. A particular metal or material may be selected for use in a particular application for a number of reasons, with material properties such as strength, corrosion resistance or electrical conductivity constituting only one set of factors. Other factors, such as price, reliability, availability and appearance, play important roles as well.

A. Substitution in the automotive industry

30. One of the largest markets for steel is the automotive industry. Since the sudden increase in energy costs of the 1970s, the world automotive industry has made significant reductions in the weight of automobiles, with effects for the future of steel demand. First, the overall reduction in size of the automobile led directly to a reduction in the amount of steel required. Secondly, the increased use of aluminium, glass fibre and plastics further reduced the proportion of steel used in the manufacture of an automobile. Third, the introduction of new HSLA steels (which were developed in large part to remain competitive in the automobile market) decreased the amount of steel required to obtain the strength of older alloys.

31. In the automotive industry, the relatively frequent introduction of new models allows the adoption of new materials, and the competition between manufacturers encourages the substitution of materials that reduce manufacturing costs or improve the marketability of the company's products. Major substitutions, such as the use of formed polymer body components, require investment in fabrication equipment which may take several years. The introduction of the aluminium radiator as a substitute for the copper radiator has taken several years in spite of the anticipated cost reduction and performance benefits.

32. In the mid-1970s aluminium radiators were introduced in automobiles as a substitute for copper ones. The change was motivated in part by the desire to reduce the weight of the automobile, but it was not until new fabrication and assembly techniques were developed that the change could move ahead. By 1983, 65 per cent of all new cars in Western Europe were equipped with aluminium radiators. Adoption of aluminium was slower in the United States (15 per cent in 1983) and in Japan (4 per cent in 1983), in part because the Europeans had a lead in the development of the technology to fabricate and assemble the radiators. Penetration of aluminium into this market is continuing, but possibilities exist of

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the development of new processes that allow reduction in the amount of copper required to build radiators which could offset the weight savings offered by aluminium so that copper could remain in competition with aluminium.

33. Manganese use in the auto industry is almost exclusively tied to steel consumption. Automobile bodies are generally constructed of steel, as are the chassis and structural components of the suspension. Aluminium, plastic and fibre composites (generally glass-fibre-reinforced plastic (GFRP)) have been used for body sections, but steel body sections have had a great advantage because of the low cost of steel and its simple fabrication process. "Limited-edition", high-performance cars have been made with GFRP bodies where the lower weight contributes to higher performance and the smaller size partially offsets the cost advantage of the steel body parts.

B. Substitution in jet engine components

34. In the aviation industry, the nuclear power industry and other industries where materials properties are critical for safe and efficient operation, materials are subject to strict standards and regulations that ensure that they will meet the requirements of the application. In the aviation industry, for example, an alloy to be used in a jet engine must undergo tests that may take 5 to 10 years and cost several million dollars. These costs in terms of both time and money establish hurdles to the adoption of substitutes that would have to offer substantial benefits before substitution could be made.

35. The jet engine is the largest consumer of cobalt and a major consumer of nickel. These metals are constituents of superalloys that possess superior strength at high temperatures. Although the aviation industry has been a growing and dependable market for superalloys, changes in engine design and increasingly more demanding materials requirements will affect the mix of materials used in the engines of the future. Since the jet engine is the largest consumer of cobalt and a major contributor to world nickel demand, it is useful to study the trends in materials usage in this industry.

36. When jet engines were first introduced as a means of propulsion for aircraft, stainless steel was used for the blades of the turbine assembly but high temperature and high stress forced a change to a new alloy containing 75 per cent nickel and 25 per cent chromium. Continued development of the high-nickel alloys led to the development of the nickel-based superalloys, and these alloys were adopted throughout the high-temperature section of the engine. Through the 1950s and 1960s, further developments in superalloys produced groups based on nickel, on cobalt and on iron and nickel. During that period substantial increases were made in the operating temperature of the jet engine, producing increases in power and efficiency. By the 1970s, gains in superalloy properties came more slowly but engine performance continued to improve as manufacturing methods and engine design increased the efficiency of the jet engine.

37. By the 1980s, new production processes were developed to increase the operating temperature of the jet engine. Recognising that the boundaries between

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grains in the superalloys were a major limitation on the strength of the material, processes were developed to form components with elongated grains or to eliminate the grains altogether by casting turbine blades as single crystals. These processes reduced the need for cobalt in the superalloys since that metal had served the role of strengthening the grain boundaries - a function not needed in single-crystal turbine blades.

38. The push for increased operating temperatures continues, and with it comes the need for materials that retain their strength at the higher temperatures. As the pace of improvements owing to advances in the metallurgy of superalloys has slowed, emphasis has shifted to new processing and fabrication techniques. 1/

39. It is anticipated that eventually the demands of the jet engine will exceed the capabilities of metal alloys, even with special processing and fabrication techniques. Ceramics and composite materials are being investigated for their potential to replace metals in the most demanding components of the jet engine. However, it will be years into the twenty-first century before such materials are introduced, and even when they are, alloys with nickel and cobalt contents will continue to be used in the other parts of the engine for many years.

C. Substitution in the telecommunications industry

40. Copper, because of its electrical conductivity, has formed the backbone of the world's telecommunications network. The development of satellite and microwave transmission systems supplemented the wire network, but the growing volume of traffic produced a market sufficient for the continued growth of copper demand. Rural and urban systems have relied almost exclusively upon copper wire for telephone communications and for other services such as cable television. However, the continued growth in demand for telecommunications services is overwhelming the wire network, and new systems based on transmission via optical fibres are beginning to make inroads into the communications infrastructure market. Fibre optics, capable of much higher communications densities than copper wire, are being installed in major long-distance communication links; the expansion of communications capacity in urban areas in developed economies has reached the limits available in underground conduits; and replacement of existing copper conductors with fibre optics is the only feasible means of expanding communications services without the drastic and expensive laying of new conduits under existing roads and structures. As the fibre optic technology is enhanced and refined it will probably expand to non-urban markets in developed countries as well as to developing country markets, thereby diminishing the world market for copper even further.

41. As an example of the above, telecommunications wiring accounts for 12 to 15 per cent of United States consumption of copper, but demand in this application is expected to decline by 40 per cent in the early 1990s due to the increased use of fibre optics and improved communications technology that will increase the amount of information that can be carried per circuit. This reduction in demand in telecommunications is equivalent to approximately 5 to 6 per cent of the United States copper market over the next decade. In addition, the replacement of copper

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wire with fibre-optic cable will lead to the recovery of copper wire now in use, at least in urban areas where there is limited space in underground conduits, so that wire will have to be removed to make room for new cable, thereby increasing the copper wire returned as scrap for reprocessing.

III. SUMMARY

42. Copper, nickel, cobalt and manganese vary in their vulnerability to substitution from other metals or materials as well as their potential to substitute for other metals or materials in current and future applications.

43. The copper market is subject to competition from substitute materials in several applications. In the automotive industry the substitution of aluminium for copper in the radiator is almost complete, although possibilities exist for the development of new processes that would allow a reduction in the amount of copper required to build radiators and thus provide opportunities for recapturing part of the market. In the electrical sector, copper and aluminium continue to share the market, with the degree of substitution varying according to relative metal prices, product design and other factors. In telecommunications, in many developed countries, a shift from electrical signals transmitted over copper wires to signals transmitted by light waves over glass fibre is expected to produce a major reduction in the market for copper.

44. Nickel use is very strongly tied to steel use. While substitutes have been developed and may be used if necessary, the general applicability of the stainless-steel alloys and their relatively low cost will ensure that stainless steel (and nickel) retain their strength in their current markets. Increased use of HSLA steels could account for a significant increase in nickel use in automotive applications and in other markets.

45. Research into the potential to reduce the need for cobalt begun in the early 1980s has produced a number of alloys and processes that can substitute for cobalt-bearing alloys in many applications. The decision to use alternative alloys is not based on whether the alloy contains cobalt, and even fluctuations in the price of cobalt may have only a small effect on its use in jet engines. The key factor in the selection of materials for jet engines will continue to be performance. As performance requirements increase the operating temperatures of jet engines over the next two decades, it appears that the materials to be used at the highest temperatures will not be as dependent upon cobalt. Nevertheless, cobalt alloys may be used in other components of the jet engine that also will see increased temperatures and require alloys that retain their properties at these temperatures. The market for cobalt magnetic alloys is unclear and depends to a great degree upon the directions of research in the development of high-intensity magnets and the growth of demand for magnetic materials for information storage. Cobalt may play an important role in magnetic materials, but the development of alternative magnetic materials could reduce the importance of this market for cobalt.

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46. While manganese will have little competition in the manufacture of steel, the market for manganese will be affected by the substitution of aluminium, plastics and HSLA steels for conventional steel. Competition from alternative materials in the steel market may be met through the application of advanced steels, but the net result of the use of such steels will be a decline in the intensity of use of steel and a correponding reduction of the intensity of use of manganese. However, investment in industrial infrastructure, whether being developed for the first time in some developing countries or rebuilt in some industrialised countries, will represent an important market for steel in the coming decades. Industrial facilities are heavy consumers of carbon steel and nickel-alloy steel, so that new construction of such facilities would contribute to the demand for both manganese and nickel.

Notes

1/ Research and development efforts are being undertaken with respect to a number of such new techniques, some of which involve a higher level of use of nickel and/or cobalt, and others a lower level. In this connection, see Office of Technology Assessment, Congress of the United States, Technologies to Reduce U.S. Materials Import Vulnerability, 1985.

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PREPARATORY COMMISSION FOR THE
INTERNATIONAL SEA-BED
AUTHORITY AND FOR THE
INTERNATIONAL TRIBUNAL
FOR THE LAW OF THE SEA
Special Commission 1

CONCRETE FORMULATIONS OF CRITERIA FOR IDENTIFYING DEVELOPING LAND-BASED PRODUCER STATES LIKELY TO BE MOST SERIOUSLY AFFECTED BY SEA-BED PRODUCTION

Background paper by the Secretariat

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INTRODUCTION

1. As a step in studying "the problems which would be encountered by developing land-based producer States likely to be most seriously affected by the production of minerals derived from the Area" (LOS/PCN/27, annex I), Special Commission 1 attempted to identify such States during the August-September 1984 Meeting of the Preparatory Commission held in Geneva. An extensive and thorough discussion took place on this issue, a summary of which is contained in paragraphs 4 to 18 of the "Statement to the plenary by the Chairman of Special Commission 1 on the progress of work in that Commission" (document LOS/PCN/L.9 of 3 September 1984). It was felt by the Special Commisson that, while the discussion pointed to several aspects of the issue, certain concrete formulations of criteria for identifying such States would facilitate its work and, consequently, the Special Commission, through the Preparatory Commission, requested the Secretariat to prepare a study presenting such formulations (LOS/PCN/L.9, para. 31). In responding to the request, this paper, in addition to presenting a few concrete formulations, discusses certain practical issues that need to be considered in making such formulations.

I. CRITERIA FOR IDENTIFICATION OF DEVELOPING LAND-BASED PRODUCER STATES LIKELY TO BE MOST SERIOUSLY AFFECTED

Criteria to measure actual effects

2. There is no production of minerals derived from the Area at present; preliminary work is being carried out which may lead to production in the future. The Special Commission has decided to focus its attention for the time being on polymetallic nodules as the most likely resources of the Area to be exploited in the foreseeable future and on copper, nickel, cobalt and manganese as the most likely mineral commodities to be produced from the polymetallic nodules. These mineral commodities are supplied from land-based sources at the present time, and future supply of the mineral commodities from the sea-bed sources in the Area may have effects on the land-based producers, particularly developing land-based producer States.

3. Developing land-based producer States which may be actually affected can only be known ex post, after supply from the Area occur in the future. However, for the purpose of Special Commission 1, an ex ante identification of developing land-based producer States which are likely to be affected is necessary so that it can study the problems which would be encountered by such States.

4. There was a general agreement during the Geneva Meeting that, based on the provisions of articles 150 (h) and 151, paragraph 10 of the Convention, the criteria to be used to identify actually affected developing land-based producer States are the "adverse effects on their export earnings or economies resulting from a reduction in the price of an affected mineral, or in the volume of exports of that mineral, to the extent that such reduction is caused by activities in the Area".

5. There was also a general agreement during the Geneva Meeting that the most practical way of applying the criteria is on the basis of relevant statistics. This quantitative approach led to the emphasis on statistically measurable indicators representing the criteria, "adverse effects on export earnings or economies".

6. During the Geneva Meeting, it was generally felt that in terms of statistical measurement, effects on export earnings were likely to be more amenable to concrete formulation of indicators than effects on the economy. However, it was also felt that with necessary information available about the overall picture of the economy and the role of the mineral sector in the economy, formulation of some kind of statistically measurable indicator representing the effects on the economy might be possible. The Special Commission was urged to pay attention to those possibilities.

7. The most straightforward indicator of export earnings which is statistically measurable is the value of export earnings of one or more of the four mineral commodities concerned, Any statistical measurement with respect to the value of export earnings, however, has to address several issues. First, Special Commission 1 may have to decide whether nominal value or real value of export earnings will serve its purpose better. Nominal value incorporates the effects of changes in overall price level (inflation/deflation) and changes in rate of exchange (appreciation/depreciation). Real value is derived by adjusting for effects of these changes.

8. Secondly, the figures for the values of export earnings need to be available directly, rather than obtained through multiplying volume of exports by unit price of exports, because unit price of exports or, for that matter, a number of reported prices, e.g., spot prices, producer prices, consumer prices, contract prices, may be different from the price actually received by the exporter.

9. Thirdly, the coverage of specific items of exports under the mineral commodities need to be uniform. In this context, it should be borne in mind that the mineral commodities are exported at various stages of processing and fabrication and for some of the items, e.g., cobalt and manganese beyond the ore stage, data are not reported separately in the case of many exporting countries.

10. Fourthly, attention needs to be paid to the inclusion of the volume of exports on a barter basis and its proper valuation, on the one hand, and the exclusion of value of re-exports, on the other.

11. One direct indicator related to the economy is the value of production of one or more of the four mineral commodities concerned. The main issue to be considered with regard to the value of production is the availability of statistics on the valuation of the amounts of outputs in the mineral sectors concerned. For the purpose of measuring gross domestic or national product accountable to these sectors, double-counting of the values of secondary inputs has to be avoided. The prices at which the outputs are valued should be the prices the producers receive rather than any reported prices.

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12. It is worth mentioning that once an indicator is selected, it will be used to measure the effects of activities in the Area. For this purpose, a comparison needs to be made between the value of the indicator in a particular developing land-based producer State resulting from the activities in the Area and the value of the indicator which would prevail if no activities in the Area occurred. This is the comparison which was referred to in document A/CONF.62/L.84 of the Third United Nations Conference on the Law of the Sea. Activities in the Area are defined as exploration for, and exploitation of, resources of the Area. Any reduction in the value of the indicator resulting from the exploration for polymetallic nodules in the Area may be extremely difficult to identify; still, Special Commission 1 may wish to deliberate on this issue. Concentrating on the effects of exploitation for the time being, the above comparison will involve two situations - one that would exist if no production from sea-bed occurred and another that would exist if production from sea-bed occurred, consistent with article 151 of the Convention. For the sake of convenience, these two situations will be referred to as the "base case" and the "sea-bed case" respectively. The issue of comparison is dealt with in another document for this session (LOS/PCN/SCN.1/WP.4). However, the Special Commission may wish to deliberate whether, in so far as there is a reduction in the value of the indicator resulting from the activities in the Area, it would be characterized as an "adverse" effect no matter what the extent of the reduction is, or whether a reduction has to exceed a certain level in order for it to be characterized as "adverse" effect. If the Special Commission decides on the latter approach, it may wish to examine if the level can be specified. As an example, the value of export earnings of one or more of the four minerals is used as an indicator; in the sea-bed case, the value of export earnings of a developing land-based producer State falls; if the reduction exceeds x million dollars, the effect of sea-bed production will be characterized as "adverse". Alternatively, it can be specified that the reduction in the sea-bed case has to exceed y per cent of the value of export earnings in the base case in order for it to be characterized as an "adverse" effect. These specified levels can be denoted as "trigger" levels to indicate that these may be used to trigger off action on the part of the Authority.

Criteria to identify States likely to be affected

13. Once it is agreed that the criteria to be used to identify actually affected developing land-based producer States are the adverse effects on their export earnings or economies, it follows logically that developing land-based producer States likely to be most seriously affected are those which are likely to suffer the most serious adverse effects on their export earnings or economies.

14. With regard to export earnings, it was argued that developing land-based producer States which earn a large amount of exports proceeds from one or more of the four mineral commodities prior to sea-bed production are likely to be most seriously affected after sea-bed production occurs. It was also added that the proportion of total export earnings of a developing land-based producer State accounted for by the export of those mineral commodities is also important. This proportion is a measure of the dependency of a particular State on these mineral commodities for export earnings. The higher the proportion, the more likely it is that the State will be seriously affected by sea-bed production. Similarly, with

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regard to the economy, it can be argued that the economies of those developing land-based producer States which have a high amount of income or product derived from the mineral sectors concerned prior to sea-bed production are likely to be most seriously affected after sea-bed production occurs. The proportion of the total national income or gross domestic product of a developing State accounted for by the mineral sectors concerned is also important. This proportion is a measure of the dependency of the State's economy on the mineral sectors concerned. The higher this proportion, the more likely it is that the State will be seriously affected by sea-bed production of the mineral commodities.

Yardsticks

15. It is evident that, based on the criteria of effects on export earnings or economies, several yardsticks can be formulated in order to identify developing land-based producer States likely to be most seriously affected by sea-bed production. During the Geneva Meeting emphasis was placed on formulating yardsticks which can be expressed quantitatively on the basis of relevant statistics. With regard to export earnings, the Chairman's Statement referred to above mentions two alternative yardsticks: (a) the value of export earnings of one or more of the four mineral commodities; or (b) the ratio of the value of export earnings of one or more of the four mineral commodities to the total export earnings of a particular developing State. With regard to the economy, the Chairman's Statement mentions two yardsticks: (a) the value of production of one or more of the four mineral commodities and (b) the ratio of the value of exports of one or more of the four mineral commodities to the gross domestic product (GDP) of a particular developing State. The Chairman's Statement added that since it appears that the formulation of several yardsticks is possible, a combination of these yardsticks may be appropriate for the purpose of the Special Commission. In fact the second yardstick included under the economy can be considered as one such combination in view of the fact that two indicators - one representing export earnings and the other representing the economy - have been combined.

Threshold levels

16. During the Geneva Meeting, it was also concluded that once an appropriate yardstick is formulated, a certain specified level of the yardstick could be used for the purpose of identifying the developing land-based producer States that are likely to be most seriously affected by the activities in the Area. If the value of the given yardstick in a particular developing land-based producer State is greater than the specified level, that State will be considered as likely to be most seriously affected. This specified level is called the "threshold" level. As an example, if the value of export earnings is taken as the yardstick, a level, e.g., z million dollars of export earnings, can be specified as the threshold level; developing land-based producer States which have an export earnings of more than or equal to z million dollars will be categorized as likely to be most seriously affected.

17. In this context, the Special Commission may wish to consider whether an identification of developing land-based producer States should be made as likely to be "most seriously affected", "seriously affected" and "affected". This may be

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necessary in view of the fact that sea-bed production is still years away and the situation in developing land-based producer States may change in the future, so that there is a likelihood that States may move from one category to another. Different threshold levels for the three categories of States can be used for this purpose.

18. For an effective monitoring of the situation in developing land-based producer States as well as for an expeditious and efficacious operation of the assistance measures, the use of threshold levels can be extremely advantageous. For example, on the basis of the threshold levels, the Authority can keep abreast of the situation in countries A, B, C and D; then as soon as the effects are identified and quantified, on the basis of the trigger levels discussed earlier, the Authority can initiate action immediately regarding A and C, say.

Timing of identification

19. The Special Commission may wish to consider whether the value of a given yardstick in a particular year or an average value over a period of time will be more useful. The value in a particular year may incorporate effects of random factors while an average over a period of time smoothes out the effects of random factors. An appropriate length of the time to be used for this purpose needs to be agreed upon if an average is used. The longer the time period, the higher the possibilities of smoothing; however, with a longer time period a simple arithmetic average fails to capture the trend. Mineral exports over a medium-term period usually show a trend. A geometric average is capable of capturing the trend to a greater extent. As an example, the International Monetary Fund in operating its Compensatory Financing Facility uses a geometric average of export earnings over a five-year period. Computing a trend line and using the values on the trend line is another smoothening device.

20. The beginning and the ending years, if a time period is used, or the year itself, if a particular year is used, is an extremely important consideration. The time period or the year selected may vary depending on the purpose. For example, as mentioned in paragraph 14 of the Chairman's Statement referred to above, for the purpose of a preliminary identification of the developing land-based producer States likely to be affected, a current year may suffice (the Statement mentions the use of year 1982, this being the year when the Convention was adopted and opened for signature). However, in the same paragraph, it was also mentioned that "a final identification will have to be made at the time sea-bed production occurs".

21. The Chairman's Statement also points out that identification will be an ongoing exercise. This implies that identification will be carried out at periodical intervals and, therefore, selecting a particular year or a time period may not be of great significance. However, for the purpose of obtaining a relatively stable categorization and preparing itself with regard to assistance measures, the Authority may find it useful to carry out the identification exercise in a specified year or time period.

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22. In this context, the year in which the first production authorizations are issued offers several advantages. First, from the production authorizations issued, a reliable estimate can be made of the timing and amount of sea-bed production. Secondly, there will be a period of up to five years before sea-bed production commences - the Authority can utilize this period to complete preparatory work so that measures of assistance can be in place.

Mineral commodities to be used as basis of identification

23. As mentioned earlier, at present four mineral commodities - copper, nickel, cobalt and manganese - are being considered by Special Commission 1. However, the potential degree of vulnerability of land-based production to sea-bed production varies from one mineral commodity to another. As mentioned in paragraph 18 of the Chairman's Statement, in terms of potential degree of vulnerability, cobalt, manganese, nickel and copper are in a descending order. It can be contended that on the basis of preliminary findings, developing land-based cobalt-producer States are likely to be most seriously affected. A study of the documents of the Third United Nations Conference on the Law of the Sea provides some evidence that the provision contained in the last sentence of article 151, paragraph 10, is aimed at the concerns of developing land-based cobalt-producer States. In any case, the Special Commission may wish to deliberate if special attention should be given to cobalt or cobalt and manganese producers while identifying the developing land-based producer States likely to be most seriously affected.

II. FACTORS THAT MAY RENDER A PARTICULAR DEVELOPING STATE LIKELY TO BE MOST SERIOUSLY AFFECTED

24. There was an extensive discussion during the Geneva Meeting about the factors that may render particular developing land-based producer States likely to suffer the most serious effects on their export earnings of economies. In emphasizing these factors, the two main issues that are pinpointed were the dependence of a particular developing State on one or more of the four mineral commodities concerned and the vulnerability of the developing State to adverse effects on the mineral sectors concerned. It was felt that developing States with larger production capacities and greater extents of excess capacities, bigger programmes for capacity expansion and new mine development, and larger amounts of high-grade reserves tend to be much more dependent on the mineral sectors than other States. Again, developing States with lower per capita income, larger population, smaller size and more disadvantaged geographical location tend to be more vulnerable to adverse effects on the mineral sector.

25. These factors need to be taken into account in the identification of developing land-based producer States likely to be most seriously affected by sea-bed production. One way of taking account of these factors would be to assign weights to each of the factors and calculate the total weights assignable to each individual developing State. This is a more comprehensive method but difficult to implement in view of the problems of assigning weights. A somewhat simpler method is to vary the threshold levels in accordance with the factors. For example, in the operation of the System for Minerals (SYSMIN) the European Economic Community

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uses a threshold level of 20 per cent (percentage of the value of the export earnings of a particular mineral commodity in the value of total export earnings of a developing State) as the threshold level; but the threshold level is lowered to 10 per cent for developing States with the lowest per capita income (least developed States).

III. CONCRETE FORMULATION OF CRITERIA FOR IDENTIFICATION OF DEVELOPING LAND-BASED PRODUCER STATES LIKELY TO BE MOST SERIOUSLY AFFECTED

26. As evident from the above discussion, concrete formulations will depend on (a) the selection of criteria: (i) effects on export earnings, (ii) effects on economies, (iii) a combination of (i) and (ii); (b) the selection of quantifiable yardsticks on the basis of the given criteria: (i) value of export earnings, (ii) value of export earnings relative to other variables, (iii) value of production, (iv) value of production relative to other variables, (v) a combination of the above; (c) the selection of time period over which the values of a given yardstick will be averaged and the method of averaging: (i) any year, (ii) the year in which production authorizations are issued, (iii) any three-, five- or seven-year period, the values being averaged through arithmetic mean, geometric mean trend method, (iv) a three-, five- or seven-year period ending in the year in the first production authorizations are issued, the values being averaged through arithmetic mean, geometric mean or trend method; (d) the selection of the mineral commodities to be used for this purpose: (i) cobalt only, (ii) cobalt and manganese only, (iii) all four mineral commodities. In addition, the yardstick needs to be measured properly for statistical purposes.

27. The Special Commission has to establish a method of arriving at threshold levels. Moreover, a selection has to be made regarding threshold levels as well as variations in the threshold levels according to certain factors mentioned in chapter II above.

28. An illustrative example follows. Here:

(a) A combination of the two criteria is used;

(b) A combination of yardsticks - relative value of exports and relative value of production is used;

(c) A five-year period ending in the year in which the first production authorizations are issued and an averaging method through geometric mean are used.

It is assumed that the yardsticks are measured properly for statistical purposes. The threshold levels are different depending on a number of factors.

29. Any developing land-based producer State will be categorized as likely to be most seriously affected if the following conditions are met:

$$A = \frac{\sqrt[5]{Xi,t-4 \cdot Xi,t-3 \cdot Xi,t-2 \cdot Xi,t-1 \cdot Xi,t}}{\sqrt[5]{Yt-4 \cdot Yt-3 \cdot Yt-2 \cdot Yt-1 \cdot Yt}} \times 100 \geq 5, 10 \text{ or } 20 \text{ per cent}$$

provided that:

$$B = \frac{\sqrt[5]{Vi,t-4 \cdot Vi,t-3 \cdot Vi,t-2 \cdot Vi,t-1 \cdot Vi,t}}{\sqrt[5]{Wt-4 \cdot Wt-3 \cdot Wt-2 \cdot Wt-1 \cdot Wt}} \times 100 \geq 1 \text{ or } 5 \text{ per cent}$$

where Xi,t = the value of export earning from mineral commodity i in year t (t is the year in which the first production authorizations are issued);

i = either cobalt only or cobalt + manganese, or cobalt + manganese + copper + nickel;

Yt = the value of total export earnings in year t;

Vi,t = the value of production of mineral commodity i in year t;

Wt = gross domestic product in year t.

5 indicates that a geometric mean over a five-year period has been used.

Multiplication by 100 indicates that ratios are converted to percentages.

A and B are symbols defined to represent the average percentages. A developing land-based producer State, if its:

per capital income	≤ 200 US dollars
or, population	≥ 10, 20, 50 million
or, area size	≤ 50,000 or 100 square kilometers
or, excess capacity in the mineral industries concerned	≥ 30, 40, or 50 per cent
or, reserves of the minerals concerned	≥ 1 million, 100 million or 1 billion metric tons

will be categorized as likely to be most seriously affected if the following conditions are met:

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$A \geq 2.5$, 5 or 10 per cent

provided that:

$B \geq .1$, .5 or 1 per cent.

The figures on the right-hand side are arbitrary figures used as examples. The Special Commission has to decide on the figures to be used.

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LOS/PCN/SCN.1/WP.4
8 February 1985

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PREPARATORY COMMISSION FOR THE INTERNATIONAL
SEA-BED AUTHORITY AND FOR THE INTERNATIONAL
TRIBUNAL FOR THE LAW OF THE SEA
Special Commission 1

PRELIMINARY STUDY ON POSSIBLE APPROACHES TO THE MEASUREMENTS OF POTENTIAL EFFECTS OF SEA-BED PRODUCTION

Background paper by the Secretariat

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SUMMARY

Future supply of the mineral commodities - copper, nickel, cobalt and manganese - from the sea-bed sources of the Area may affect the export earnings or economies of developing States which supply these minerals from land-based sources. The effects, if there are any, will result from a reduction in the price or volume of exports of one or more of the four mineral commodities to the extent that such reduction is caused by sea-bed supply.

The central issue is to establish the fact that if such a reduction occurs at the time of future sea-bed supply, the reduction has been caused by sea-bed supply itself; once this is established, the extent of the reduction needs to be measured.

Conceptually, a distinction can be made between two situations: one that would exist in the future if no sea-bed supply occurred from the Area (referred to as the "base case") and the other that would exist if sea-bed supply occurred from the Area, consistent with article 151 of the Convention (referred to as the "sea-bed case"). A comparison should be made between price and volume of exports in the base case and in the sea-bed case. This is different from comparing price and volume of exports before and after sea-bed supply.

According to the abstract analysis of demand-supply-price determination, other things remaining the same and given the future behaviour of the demand and the land-based supply, price and/or volume of exports of land-based suppliers are expected to fall when sea-bed supply occurs.

However, the fact that sea-bed supply will occur may itself cause changes in the behaviour of the demand and the land-based supply, and Special Commission 1 may wish to investigate the possibilities of such changes.

Forecasting methods can be extremely useful for determining the outcomes in the base case and in the sea-bed case. Forecasting years in advance, however, is beset with a number of uncertainties and imponderables. It is suggested in the present paper that forecasting at the time the first production authorizations are issued may be advantageous.

Two basic forecasting methods are discussed: one that extrapolates the past time-trend of price and volume to the future and the other that estimates price and volume as resulting from the influences of determining factors, in a framework capable of explaining cause-and-effect relationships.

Forecasting methods necessarily involve some abstractions, which make the outcomes of the forecasting exercises different from those in the real world. Certain suggestions are made in the present paper for the incorporation of some of the real world phenomena in the forecasting exercises.

Although it does not attempt to explain the cause-and-effect relationships, the time-trend method offers certain advantages, e.g. simplicity and ease of application, potential of obtaining order-of-magnitude results which may be sufficient for the purpose of Special Commission 1. A simplified application of this method is illustrated at the end of this paper.

INTRODUCTION

1. In studying "the problems which would be encountered by developing land-based producer States likely to be most seriously affected by the production of minerals derived from the Area" (LOS/PCN/27, annex I), Special Commission 1 has to deal with the issue of the measurement of "adverse effects on the export earnings or economies (of developing land-based producer States) resulting from a reduction in the price of an affected mineral or in the volume of exports of that mineral, to the extent that such reduction is caused by activities in the Area". At the conclusion of the August-September 1984 Meeting in Geneva, the Special Commission, through the Preparatory Commission, requested the Secretariat to prepare a "preliminary study on the possible approaches to the measurement of potential effects of sea-bed production". This paper is intended to respond to that request.

I. WHAT IS TO BE MEASURED

2. Activities in the Area are defined as the exploration for, and the exploitation of the resources of the international sea-bed Area. The Special Commission has concluded that the resources which are most likely to be exploited in the foreseeable future are the polymetallic nodules, and the mineral commodities most likely to be produced from the polymetallic nodules are copper, nickel, cobalt and manganese. These mineral commodities are supplied from land-based sources at the present time, and future supply of the mineral commodities from the sea-bed sources may affect the prices of the mineral commodities or the volumes of exports of these mineral commodities from land-based producers.

3. The central issue is to establish the fact that if a reduction in the price of an affected mineral or in the volume of exports of that mineral occurs, this reduction has been caused by supply from the sea-bed. Once this is established, the extent of the reduction caused by supply from the sea-bed needs to be measured.

4. The conventional tool of analysis in this context is the supply-demand-price determination mechanism. In its most simplified version, ceteris paribus, the demand function and the land-based supply function are specified. The curve representing the demand function slopes downward reflecting the fact that larger quantities are demanded at lower prices, and the curve representing the supply function slopes upward reflecting the fact that larger quantities are supplied at higher prices. The sea-bed supply function showing different quantities supplied from sea-bed sources at different prices is also specified. The land-based and the sea-bed supply functions are added to obtain a total supply function; this supply function gives the different quantities supplied, both from land-based and sea-bed sources, at different prices. The market-clearing price and quantity is then determined as the condition demand equals supply is fulfilled. The point of intersection of the demand curve and the total supply curve represents the market-clearing price and quantity. Figure 1 depicts the situation.

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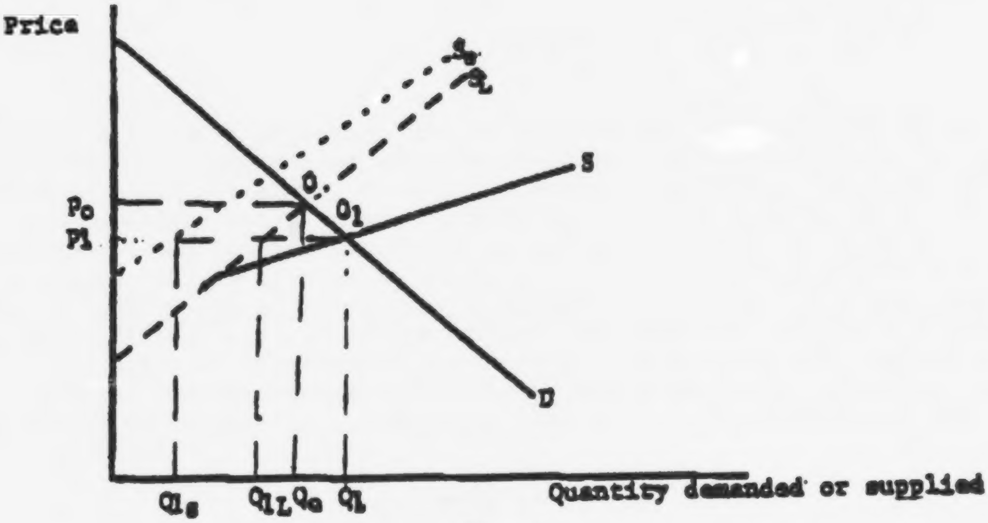

Fig. 1

Two situations are distinguished: one that would exist if no production from the sea-bed occurred (referred to as the "base case") and another that would exist if production from the sea-bed occurred, consistent with article 151 of the Convention (referred to as the "sea-bed case"). D is the demand curve, S_L the supply curve for land-based sources and S_s the supply curve for sea-bed sources, and S the total supply curve derived by adding S_L and S_s horizontally. In the base case, P_o and Q_o would have been the market-clearing price and quantity with P_oQ_o being the value of export earnings of land-based producers, denoted by V_{Lo} (assuming that all land-based production is for exports). In the sea-bed case, the market-clearing price and quantity are P_1 and Q_1 and the value of export earnings of land-based producers is $P_1.Q_{L1}$, denoted by V_{L1}.

5. It can be seen easily that D being given, as long as S is below and to the right of S_L, price and volume of exports in the sea-bed case and, thus, the value of exports of land-based producers will be lower than in the base case. S will necessarily be below and to the right of S_L if there is any supply from sea-bed sources at price P_o. If sea-bed sources cannot supply at price P_o, on strict price considerations there will be no supply from the sea-bed in the sea-bed case; however, non-price considerations may contribute to the absorption of sea-bed supply. In the latter case, D is no longer given; D shifts to the left of its original position to the extent that sea-bed supply is absorbed under non-price considerations. Again, in this case, price and volume of exports and, therefore, the value of exports of land-based producers will be lower than in the base case. The opposite of this case is when land-based sources cannot supply at price P_1 (this can happen if S_s is lower than the starting point of S_L all the way up to the point O_1, i.e. sea-bed sources can supply all the amount demanded at a lower price than any land-based supplier). In this case, on strict price considerations there will be no supply from the land-based sources; however non-price considerations, e.g., production ceiling, may contribute to the absorption of some land-based supply.

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6. It should be noted that the shapes of the demand and the supply curves do not alter the above results except when D is horizontal, i.e. demand is infinitely elastic; when price is below or equal to a given level, any quantity can be demanded. In this case, price, volume and value of exports of land-based producers in the sea-bed case will remain the same as in the base case. This is one of the possibilities pointed out in paragraph 14 of document LOS/PCN/SCN.1/WP.1.

7. So far it has been assumed that D is given. However, if D is shifted upwards, i.e. demand is increased, strictly as a result of sea-bed supply to the extent that sea-bed supply is absorbed by this "new" demand, then price, value and volume of exports of land-based producers in the sea-bed case will remain the same as in the base case. The other three possibilities pointed out in paragraph 14 of document LOS/PCN/SCN.1/WP.1 fall under this category. It should be noted that the shift upwards of D for any other reason is not possible because D, as given, is assumed to have incorporated the effects of these factors. Similarly, S_L and S_s are also assumed to be given. But the possibility has to be kept in mind that with reduced foreign exchange earnings in the sea-bed case, land-based producers may have to supply more to offset the reduction. In that case, it will shift downwards.

8. Given this theoretical construct, it will be useful to examine what can be observed in the real world. Assuming that sea-bed supply occurs in year t, in that year there will be an observed price and value of exports of land-based producers. Thus, P_1 and V_{L1} will be known. The crucial issue is what values of P and V_L will P_1 and V_{L1} be compared against. Theoretically, they should be compared against P_o and VL_o. But P_o and VL_o are not observable; methods of determining P_o and VL_o need to be investigated.

9. In this connection, one issue needs to be clarified. A comparison of observed P_o and VL_o in year t-1 when sea-bed supply was not in the market with observed P_1 and VL_1 in year t would not address the problem. For example, the observed price in year t may be the same as the observed price in year t-1. One cannot come to the conclusion that no reduction in price resulted from sea-bed supply in year t, because the price in year t might have been higher had there been no sea-bed supply in that year. The same reasoning applies even if the observed price in year t is higher than the observed price in year t-1. It can be argued that the price in year t would have been higher still had there been no sea-bed supply.

10. On the other hand, if there is a reduction in the observed price in year t in comparison with that in year t-1, one cannot conclude that the reduction resulted from sea-bed supply alone. To illustrate this point, one can argue that prices have been falling for some time and the price in year t was expected to be lower than that in year t-1, even if there were no sea-bed supply. The main issue is that a comparison needs to be made between the price in year t in the sea-bed case and the price in the same year in the base case, and not between the price in year t in the sea-bed case and the price in year t-1 when sea-bed production does not occur. All this leads one back to the question of what the price in year t would have been had there been no sea-bed supply.

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II. POSSIBLE APPROACHES TO MEASUREMENT

Timing of forecasting

11. Forecasting methods can be extremely useful for the purpose of determining price and volume of exports in year t, the year when sea-bed production actually occurs. At this point, a digression will be useful, dealing with the issue of timing of forecasting. The exercise in question is to look at the situation in year t in the base case and in the sea-bed case. At present in 1985, one possible alternative is to forecast the price in year t. But the problem is that t is unknown and can be years away; forecasting years in advance is beset with a number of uncertainties and imponderables; accuracy of such a forecast is very much in doubt.

12. Another alternative will be to wait till year t-1 and then forecast the price and volume in year t only one year ahead. The accuracy will be of a substantially higher degree; in fact, forecasts for mineral commodities carried out both by private and public sectors one year ahead have been very close to the actual situation. However, for other purposes, the Special Commission may wish at this time to have an idea about the mineral market in year t. The Special Commission may address the issue of timing of forecasting keeping in view the relative accuracy of measurement of the reduction in price and volume resulting from sea-bed supply, on the one hand, and other needs for longer-term forecasting on the other.

13. In this context, consideration should be given to the year in which the first production authorizations are issued as an appropriate time to carry out the forecasting exercise. There are several advantages. First, from the production authorizations issued, a reliable estimate can be made of year t and the amount of sea-bed production. Secondly, there will be a period of up to five years before sea-bed production commences - the Authority can utilize this period to complete preparatory work so that measures of assistance can be in place. Thirdly, this five-year period, being the transition period, is expected to witness certain adjustments and speculative activities in anticipation of sea-bed production; the period before this five-year period, the pre-transition period, will be relatively stable and can be considered to reflect the underlying market forces which would operate if sea-bed production were not in the picture. The pre-transition period is the period closest to the sea-bed production period when market forces relatively free of sea-bed production considerations can be assumed to operate. A forecast based on the time between the pre-transition period and the sea-bed production period is expected to portray a relatively accurate picture of the market if there were no sea-bed production.

14. On the other hand, there are two main disadvantages. The year in which the first production authorizations are issued is still about five years away from the sea-bed production year and forecasting five years into the future may involve relatively more uncertainties than forecasting one year into the future. However, this may not be as disadvantageous as it seems considering the fact that five-year forecasts may capture the trends of underlying market forces and are immune from short-term considerations, compared to one-year forecasts. Secondly, if there are planned adjustments during the five-year period, these will not be captured if the

forecasts are done in the production authorization year. Again, a careful monitoring of developments and a sorting of planned and undesired adjustments can continue and the Authority can revise the forecasts taking into account the planned adjustments.

Methods of forecasting

15. Broadly speaking, there are two basic forecasting methods - one is to extrapolate the past time-trend of price and volume to the future and the other is to estimate price and volume as resulting from the influences of determining factors.

16. In extrapolating the time-trend, a period of recent past is chosen, the behaviour of price and volume over time in that period is quantified and, assuming that whatever underlying factors were behind the past experience will also repeat themselves in the future, quantified behaviour is applied to future price and volume. The major problem with this approach is that past experience varies in the different past periods and thus, depending on the past period chosen, the future extrapolations will also be different. Besides, the underlying factors in the future may be quite different from those in the past.

17. The approach involving determining factors uses a theoretical framework capable of explaining cause-and-effect relationships. The demand-supply-price determination framework is most commonly used. Theoretically, if the D and S_L functions can be specified, it is easy to determine Po and Vo. But the problem is that these functions reflect ex ante situations, i.e. the D function portrays what price consumers would be willing to pay for different quantities; the S_L function portrays what quantity the land-based suppliers would be willing to supply at various given prices. These are theoretical constructs almost impossible to obtain in real life. However, empirical specification of demand and supply functions based on ex post observed data is quite common. Usually, the functional relationships reflected in the empirically derived demand and supply functions are also taken to be valid for unobserved or ex ante situations.

18. The empirical exercise: (a) first specifies a price formation framework; (b) then identifies important factors that have influence on demand and supply; (c) then measures the extent of influence these factors had on demand and supply in the past; (d) then obtains future values of the determining factors; and (e) finally, on the assumption that the determining factors operate as they had in the past, future demand and supply are estimated. It can be easily seen that the estimates can vary according to the specification of the price formation mechanism, differences in the determining factors selected, variations in the measured extents of influence, differences in the future values of the determining factors and the degree of stability in the structure of relationships between demand and supply, on the one hand, and the determining factors on the other.

19. Several determining factors for mineral commodities demand can be identified. These mineral commodities are mainly used as raw materials for end-products. So the demand for these mineral commodities is dependent on the demand for the end-products. In the absence of data about end-use, the demand for mineral

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commodities can be considered to be dependent on overall industrial production, or since the mineral commodities in question are mainly used in producing capital goods, an index of production in the capital goods sector can be taken as a determining factor. As income level rises, consumption of mineral commodities rises too. Thus, gross national product (GNP) or per capita GNP can be thought of as a determining factor. Finally, the price of the mineral commodities and the price of their substitutes have an influence on mineral commodities demand. Other things remaining the same, it is expected that a higher price of the mineral commodities will lead to lower consumption of the mineral commodities and a lower price of the substitutes will encourage consumption of the substitutes at the expense of the consumption of the mineral commodities concerned.

20. On the supply side, cost of production relative to price is usually considered the main determining factor. Technological improvement in the mining and processing methods are also important determining factors.

21. Whatever the determining factors selected, to estimate demand and supply for mineral commodities determined by these factors in the future, future values of these factors have to be obtained. Usually, these values are obtained by extrapolating into the future the time-trend of past values of these factors, or by making some assumptions regarding the behaviour of these factors in the future. It should be kept in mind that the values will vary according to the procedure of obtaining them.

22. It is useful to point out that in contrast to this method, in the time-trend extrapolation method the only determining factor is time. Future values for the determining factor are no problem.

23. Finally, judgement has to be made regarding the extent of influence of the determining factors on future demand and supply. These factors may not have the same extent of influence in the future as in the past. For example, there has been a noticeable decline over time in the intensity of use of copper per dollar of GNP in certain countries. If this decline persists in the future, the extent of influence of GNP on future copper demand has to be adjusted correspondingly. Any new uses of the metal in question, or any technological change involving the use of the metal, will have an impact on the intensity of use per unit of end-product.

Method of comparison

24. The above methods can be used to forecast price and volume in year t in the base case as well as in the sea-bed case. However, in year t, price and volume in the sea-bed case will be observable. Hence, there may not be any need to forecast these. The forecast values of price and volume in year t in the base case can then be compared with the observable value of price and volume in year t, which by definition represent the sea-bed case. (An important assumption behind this is that the behaviour of the land-based producers remains unchanged; the possibility mentioned in paragraph 7 about a change should be examined.)

25. However, complications may arise from two sources: (a) The observed values of the determining factors in year t may be different from the forecast values for

year t used for obtaining price and volume in the base case, and (b) the effects of other factors: these factors are assumed to be random in the forecasting method and their effects are expected to be zero; in reality, however, their effects may be anything other than zero.

26. With regard to the first source, adjustments can be made in the forecast value of price and volume by replacing the forecast value of determining factors by the observed values. These adjustments will yield values for price and volume in year t in the sea-bed case with observed values of determining factors prevailing.

27. Adjustments for the second source may be more complicated but can be made. For example, an unforeseen disruption of land-based supply occurs in year t because of a strike. This may cause an increase in the observable price in year t. But this is also expected to raise the price which would have prevailed if sea-bed supply had not occurred in year t. Adjustment is thus required in the base case price, but the problem is how to make the necessary adjustment. One way would be to examine the effects of strikes on prices in the past (usually this is done with the use of a so-called "dummy" variable in the forecasting method). Other unusual occurrences or "perturbations" can also be adjusted for through similar methods.

28. The results of the above adjustments will be forecast values of price and volume in year t in the base case with the effects of all important observable phenomena in year t taken into account. These values can be considered as those which would have occurred in year t, other things remaining the same, and with sea-bed production non-existent. These values can then be compared with the observable values of price and volume in order to measure the extent of reduction resulting from sea-bed production.

III. A SIMPLIFIED APPLICATION OF THE TIME-TREND EXTRAPOLATION METHOD

29. Strictly for illustrative purposes, a simplified application of the time-trend extrapolation method follows. The drawbacks of this method have been mentioned earlier. However, there are certain advantages which led to the use of this method in article 151 of the Convention. Several studies, both at the global and the national levels, have also applied this method. These advantages include: simplicity and ease of application, ease of obtaining future values of the determining factor, and the potential of obtaining order-of-magnitude results.

30. Assuming that the forecasts will be carried out in the year in which the first production authorizations are issued, on the basis of observed values of export earnings of developing land-based producer States over the previous seven-year period, figure 2 depicts the situation.

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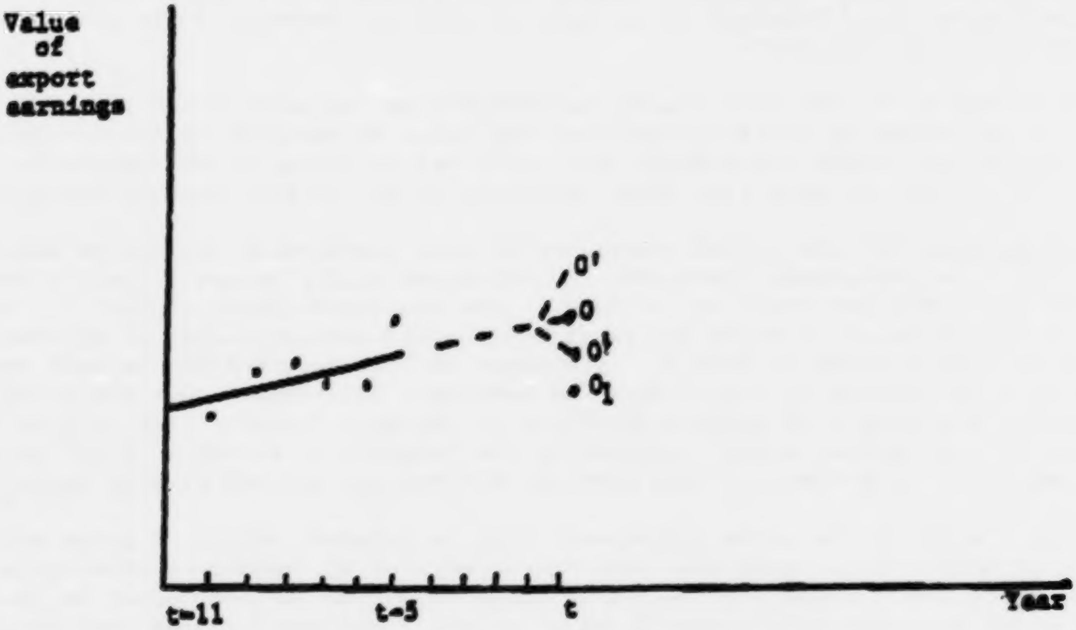

Fig. 2

The line is the trend-line calculated on the basis of seven-year observed data on value of export earnings of developing land-based producer States. t-5 is the year in which the first production authorizations are issued and t is the year in which sea-bed production is expected to occur. The value of export earnings at point O can be calculated by extrapolating the trend line to year t. This is the value that would occur if no sea-bed production took place. The value at point O_1 is the value that is observable with sea-bed production taking place. The values at O and O_1 can be compared to obtain the extent of reduction caused by sea-bed production. If other phenomena in year t are observed, which may cause a deviation from the trend-line, the trend-line value can be adjusted taking into account the effects of these phenomena. If the adjusted value is represented by point O′, the two values - at O′ and O_1 - can be compared to measure the extent of reduction caused by sea-bed production.

LOS/PCN/SCN.1/WP.5
29 August 1985

ORIGINAL: ENGLISH/FRENCH

PREPARATORY COMMISSION FOR
THE INTERNATIONAL SEA-BED AUTHORITY AND FOR
THE INTERNATIONAL TRIBUNAL FOR THE LAW OF THE SEA
Special Commission 1
Geneva, 12 August - 4 September 1985

INFORMATION ON EXISTING INTERNATIONAL OR MULTILATERAL ECONOMIC MEASURES WHICH COULD BE OF RELEVANCE TO THE WORK OF SPECIAL COMMISSION 1

Background paper by the Secretariat

1. In the course of studying the ways and means of minimizing the difficulties which would be encountered by developing land-based producer States likely to be most seriously affected by the production of minerals derived from the international sea-bed Area, and of helping such States to make the necessary economic adjustment, including the establishment of a compensation fund, Special Commission 1 came to the conclusion that it would be extremely useful to study certain existing international or multilateral economic measures which could be of relevance to its work. The Special Commission requested the Secretariat to make available to it information on such measures as well as on pertinent programmes or activities of international and multilateral organizations. In order to obtain information from the most direct and accurate sources, the Secretariat requested the relevant organizations to provide such information. As requested by the Special Commission, the Secretariat also invited representatives of the respective organizations to attend the Geneva meeting of the Preparatory Commission for the International Sea-Bed Authority and the International Tribunal for the Law of the Sea so that the Special Commission would have an opportunity to benefit from their presence in studying the respective measures, programmes or activities for its own purpose.

2. In identifying the organizations to be contacted, the Secretariat relied on the guidance given to it by the Special Commission as well as on a Report of the Secretary-General prepared for the Committee on Natural Resources of the Economic and Social Council, dealing with co-ordination of programmes within the United Nations system in the field of minerals.[1/] The organizations fall under the categories of: (a) United Nations Secretariat units, (b) United Nations organizations, (c) Regional Commissions, (d) Specialized Agencies, (e) Regional Development Banks, and (f) Intergovernmental Organizations. A list of the organizations contacted is presented in Annex I. By 15 August 1985, responses were received from all the organizations except

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a few. Representatives from a number of organizations also accepted the invitation to attend the Geneva meeting. This document has been prepared on the basis of the responses of the organizations, which in some cases included information notes prepared by the respective organizations themselves, as well as the presentations made by the representatives of the respective organizations, and on the materials provided by the organizations. For the sake of comprehensiveness, and in order that the Special Commission can have the information available in one document, the information contained in an earlier document, LOS/PCN/SCN.1/WP.2/Add.2 of 23 August 1984 has been reproduced or updated in the present document. Annex II presents the information on the existing economic measures, or programmes or activities of international and multilateral organizations in the field of non-ferrous mineral industries in developing countries. The Secretariat reiterates its appreciation for the co-operation of the organizations concerned.

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ANNEX I

ORGANIZATIONS CONTACTED FOR INFORMATION OF RELEVANCE TO THE WORK OF SPECIAL COMMISSION 1

A. United Nations Secretariat Units

Department of International Economic and Social Affairs (DIESA)

*Department of Technical Co-operation for Development (DTCD)

Centre on Transnational Corporations (CTC)

B. United Nations Organizations

United Nations Development Programme (UNDP)

United Nations Development Programme/United Nations Revolving Fund for Mineral Exploration (UNDP/Revolving Fund)

United Nations Conference on Trade and Development (UNCTAD)

United Nations Industrial Development Organization (UNIDO)

United Nations Environment Programme (UNEP)

C. Regional Commissions

Economic Commission for Africa (ECA)

*Economic Commission for Latin America and the Caribbean (ECLAC)

*Economic Commission for West Asia (ECWA)

Economic and Social Commission for Asia and the Pacific (ESCAP)

*Economic Commission for Europe (ECE)

D. Specialized Agencies

World Bank (WB)

International Monetary Fund (IMF)

United Nations Educational, Scientific and Cultural Organization (UNESCO)

International Labour Organisation (ILO)

Food and Agriculture Organization (FAO)

International Atomic Energy Agency (IAEA)

E. Regional Development Banks

*African Development Bank (ADB)

Asian Development Bank (AsDB)

Inter-American Development Bank (IDB)

F. Multilateral Organizations

European Economic Commission (EEC)

General Agreement on Tariffs and Trade (GATT)

*Conseil Intergouvernemental des Pays Exportateurs de Cuivre (CIPEC)

*By 15 August 1985, no response was received from these organizations.

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ANNEX II

INFORMATION ON EXISTING INTERNATIONAL OR MULTILATERAL ECONOMIC MEASURES AND ON PROGRAMMES OR ACTIVITIES OF INTERNATIONAL AND MULTILATERAL ORGANIZATIONS, OF RELEVANCE TO THE WORK OF SPECIAL COMMISSION 1

A. UNITED NATIONS SECRETARIAT UNITS

I. Department of International Economic and Social Affairs (DIESA)[2]

The Department seeks to identify emerging development problems, trends and issues with regard to both their short-term impact and the long-term implications for the purpose, inter-alia, of facilitating the process of inter-governmental negotiations. In this connexion, the programme of the Ocean Economics and Technology Branch of the Department is designed to assist and encourage efforts to incorporate economic resources and uses in the development process with particular attention to the development of marine resources.

Within the terms of reference of the Department, a number of activities focus on problems which may be encountered by developing land-based producer States as a result of the production of minerals derived from the international sea-bed area. The Branch has finalized, in particular, a draft publication entitled "Methodologies for Assessing the Impact of Deep-Sea-Bed Minerals on the World Economy", which might provide useful information relevant to the work of the Preparatory Commission. This publication, which is currently being processed and should be issued in the last quarter of 1985, could be transmitted to the Preparatory Commission next year.

II. Centre on Transnational Corporations (CTC)[3]

The Centre carried out studies on bauxite, copper and tin in several producing countries focusing on the role of transnational corporations (TNCs) in such industries.

B. UNITED NATIONS ORGANIZATIONS

I. United Nations Development Programme (UNDP)[4]

The concerns of developing land-based producer States relate to the production of copper, nickel, cobalt and manganese from deep-sea nodules and to the potential disruption of the international market prices for these metals caused by conditions of over-supply. The situation would be akin to the present where world-wide economic conditions have reduced demand for these metals and the resultant over-supply has severely depressed market prices. This has led to the mothballing of considerable production capacity, particularly in the case of copper and nickel, the reduction in investment in new production capacity and the curtailment, world-wide, of exploration activities. Metal producing industries located in developed as well as developing countries have suffered alike. However, those countries whose economies are largely dependent on revenues from high-cost mines have suffered most.

In this context, UNDP is assisting the affected developing countries to broaden their industrial, agricultural and human resources base so as to lessen the inherent risks associated with the near-exclusive dependence

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of their economies on the vagaries of world market prices of the specific commodities that they produce. The problem is broader as it includes other mineral commodities than those under discussion, petroleum, and a host of agricultural commodities traded world-wide. Specific measures include activities to enhance self-reliance, reduce imports, expand alternative exports and enhance trade.

As regards the potential for deep-sea exploitation taking place and for its production to affect world market prices, UNDP does not see cause for concern in the near or medium-term. As mentioned above, depressed prices, mothballed production capacity and known, but unexploited ore reserves in undeveloped deposits on land can be expected to delay, on purely economic grounds, the implementation of any deep-sea mining scheme until well after the year 2000, particularly for copper and nickel.

With regard to polymetallic nodules, there are two regional projects that have been supported by UNDP for a number of years providing assistance to the developing countries of the South Pacific and of East Asia respectively, whose objectives include, inter-alia, the exploration for metalliferous nodules in their exclusive economic zones (EEZs).

Finally, as regards the other two commodities, manganese and cobalt, the possibility of economic consequences of offshore production would appear to be modest. Manganese dioxide of considerable purity is being mined and traded in developed and developing countries at approximately $60 per ton for metallurgical-grade ore, the principal use of manganese. Manganese of high purity, derived as a by-product of manganese nodule treatment, could only affect the markets for low-volume, specialty uses of manganese and then only potentially, and also largely in developed countries; the nodules themselves are of too low a grade and too contaminated with impurities (copper, nickel, phosphorous, etc.) to be considered as metallurgical ore. As regards cobalt, the world price is very elastic, being responsive to political conditions in one developing country: some 20,000 metric tons were produced/consumed in non-centrally planned economy countries in 1984. It can be assumed that cobalt prices would drop sharply, however, only if polymetallic deep-sea nodules were mined and treated for their nickel and copper contents as cobalt is generally only present in relatively minor amounts and then would be recovered only as a co-product.

II. UNDP/UN Revolving Fund for Natural Resources Exploration[5]

The principal target minerals of the exploration projects of the Revolving Fund to date have been precious metals given their relatively high unit value and the potential favourable replenishment contribution to the Fund from successful discoveries. The Fund has only looked for copper in association with precious metals. The Fund has looked for laterite nickel in one country but the mineralization was considered to be of insufficient grade and tonnage for a viable mining operation.

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The Fund would consider nickel, cobalt and manganese as target minerals should exploration prospects offered to the Fund by Governments be considered to have potential economic viability. Given the high level of known copper reserves world wide, it is unlikely that the Fund would search for copper, unless the prospect appeared to offer exceptionally high ore grade and tonnage.

As indicated above, the mandate of the Fund states that projects are to be selected on the basis of their potential economic viability. While commodity markets are a factor in determining potential economic viability, it is unlikely that any one Fund discovery will have an impact on world supply.

With regard to deep sea-bed mineralization, the Fund is of the opinion that much more research and information is required on the extent of the resource, technology and extraction costs before the impact on land based mineralization can be evaluated.

III. United Nations Conference on Trade and Development (UNCTAD)

International Commodity Agreements or Arrangements within the framework of the United Nations Conference on Trade and Development's (UNCTAD's) Integrated Programme for Commodities (IPC) [b]

The United Nations Conference on Trade and Development's (UNCTAD's) approach towards the stabilization and promotion of commodity markets for the benefit of producers as well as consumers has resulted in an over-all integrated framework combining several elements and covering a number of commodities. This framework is reflected in the UNCTAD'S Integrated Programme for Commodities (IPC), two of the most significant elements of which are the promotion of commodity agreements or arrangements and the establishment of a common fund for commodities. At present 18 commodities are covered by the IPC; out of the mineral commodities in which the Special Commission is interested at the moment, copper and manganese ore are covered by the IPC.

International commodity agreement or arrangement is an intergovernmental agreement or arrangement to promote international co-operation in a commodity, the parties to which include producers and consumers covering the bulk of world trade in the commodity concerned. No commodity agreements have been established so far for copper, nickel, cobalt or manganese, the four metals on which the Special Commission is focusing its attention. However, under the auspices of the UNCTAD, a commodity agreement in tin (Sixth International Tin Agreement) has been established; the Special Commission may wish to study this agreement in an effort to assess the relevance of the experience of this agreement for its work.

The Sixth International Tin Agreement is designed primarily to prevent excess fluctuations in the price of tin, to help increase the export earnings from tin, and to secure an adequate supply of tin at prices fair to consumers and remunerative to producers. The Agreement embodies two main operational mechanisms: the use of a buffer stock and the application of export controls, when necessary, to reinforce buffer stock operations under specified circumstances, in order to adjust supply to demand.

The operation of the buffer stock is related to a floor price and a ceiling price, the latter being required to be 30 per cent above the former. The range between them is divided into three equal sectors. The floor and ceiling prices, which are expressed in Malaysian currency (ringgit) or in any other currency which the International Tin Council (the organization responsible for the implementation of the Agreement) may decide, are subject to review by the Council from time to time and may be revised with a view to attaining the objectives of the Agreement. The initial floor and ceiling prices under the Sixth Agreement are to be those in force on the termination of the Fifth Agreement (1 July 1982).

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The Agreement provides for a buffer stock consisting of a normal stock of 30,000 metric tons of tin metal to be financed from direct government contributions, and an additional stock of 20,000 metric tons of tin metal to be financed from borrowing, using as security stock warrants and, if necessary, government guarantees/government undertakings.

A major new feature of the Sixth Agreement is the provision that the financing of the normal buffer stock shall at all times be shared equally between producing and consuming members, in proportion to their respective percentages of production or consumption in effect at the time of the apportionment of contributions. An initial contribution amounting to the cash equivalent of 10,000 metric tons of tin metal is due on entry into force of the Agreement, and the remainder on such date or dates as may be determined by the Council. Contributions can be called up in cash only, and not in tin metal or a combination of cash and metal; all are to be evaluated on the basis of the floor price in effect at the date when they are called. The cost of the normal buffer stock of 30,000 metric tons has been estimated at about US$450 million, and that of the full buffer stock at about $US 750 million.

Export controls may be used under certain conditions as an additional measure to attain the objectives of the Agreement, their introduction being conditional on the amount of tin held in the buffer stock. The Council may, by a specified majority, declare an export control period when 70 per cent or more of the maximum volume of the buffer stock (normal plus additional stock) is held in tin metal. When the tin held in stock reaches 80 per cent or more of the maximum volume of the buffer stock, the Council may declare an export control period by another specified majority. In declaring an export control period (normally corresponding to a calendar quarter), the Council fixes a total permissible export tonnage for that period, which is then divided among producing members in proportion to their respective production or export figures for a specified period. In fixing the total permissible export tonnage, the Council has to take into account estimates of production and consumption, the quantity of tin metal and cash held in the buffer stock, the quantity, availability and probable trends of other stocks and any other relevant factors. It is also the duty of the Council to adjust supply to demand so as to maintain the price of tin metal between the floor and ceiling prices. Export controls may be moderated during an export control period, if certain conditions exist.

There are also provisions dealing with action in the event of an actual or anticipated tin shortage as well as the disposal of tin from non-commercial stockpiles.

UNCTAD'S Common Fund for Commodities 7/

Interrelated with the UNCTAD'S efforts within the framework of IPC in facilitating the conclusion and functioning of international commodity agreements, particularly concerning commodities of special interest to developing countries, the establishment of the Common Fund for Commodities has been a major focus of the UNCTAD's activities related to commodities.

The Fund shall exercise the following functions: (a) to contribute, through its First Account to the financing of international buffer stocks and internationally co-ordinated national stocks, all within the framework of International Commodity Agreements or Arrangements (ICAs); (b) to finance, through its Second Account, measures in the field of commodities other than stocking; (c) to promote co-ordination and consultation through its Second Account with regard to measures in the field of commodities other than stocking, and their financing, with a view to providing a commodity focus.

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The facilities of the Common Fund's First Account shall be used only by International Commodity Organizations (ICO's - the organizations established by International Commodity Agreements or Arrangements to implement the provisions of the Agreements or Arrangements) providing for either international buffer stocks or internationally co-ordinated national stocks, and which have concluded an Association Agreement with the Common Fund. The Association Agreement shall comply with the terms of the Agreement Establishing the Common Fund and of any rules and regulations consistent therewith to be adopted by the Governing Council of the Common Fund.

From the resources of the Second Account, the Common Fund may make or participate in loans and grants for the financing of measures in the field of commodities other than stocking. The measures shall be commodity development measures, aimed at improving the structural conditions in markets and at enhancing the long-term competitiveness and prospects of particular commodities. Such measures shall include research and development, productivity improvements, marketing and measures designed to assist, as a rule by means of joint financing or through technical assistance, vertical diversification, whether undertaken alone, as in the case of perishable commodities and other commodities whose problems cannot be adequately solved by stocking, or in addition to and in support of stocking activities.

There are a number of terms and conditions for the loans and grants to be made from the Second Account for the financing of measures in the field of commodities. For example, the measures shall be jointly sponsored and followed up by producers and consumers within the framework of an International Commodity Body (ICB). Among others, an ICB shall be established on an intergovernmental basis, with membership open to all States Members of the United Nations or any of its specialized agencies or of the International Atomic Energy Agency; it shall be concerned on a continuing basis with the trade, production and consumption aspects of the commodity in question; its membership shall comprise producers and consumers which shall represent an adequate share of exports and of imports of the commodity concerned. The ICB sponsoring a project to be financed by the Fund through its Second Account shall submit to the Fund a detailed written proposal specifying the purpose, duration, location and cost of the project and the agency responsible for its execution. Before any loan or grant is made, the Managing Director of the Common Fund shall present to the Executive Board of the Common Fund a detailed appraisal of the proposal along with his recommendations and the advice of the Consultative Committee of the Common Fund. Decisions with regard to the selection and approval of proposals shall be made by the Executive Board by a specified majority in accordance with the Agreement Establishing the Common Fund and any rules and regulations for the operations of the Fund adopted pursuant thereto.

The capital of the Common Fund shall consist of: (a) Directly Contributed Capital to be divided into 47,000 Shares to be issued by the Fund, having a par value of 7,566.47145 Units of Account each and a total of 355,624,158 Units of Account; and (b) Guarantee Capital provided directly to the Fund by the Associated ICO's. The Shares to be issued by the Fund shall be divided into: (a) 37,000 Paid-in Shares; and (b) 10,000 Payable Shares. Each Member which has ratified, accepted or approved the Agreement shall subscribe, according to a schedule annexed to the Agreement: (a) 100 Paid-in Shares; and (b) any additional Paid-in and Payable Shares. Each Member which has acceded to the Agreement shall subscribe: (a) 100 Paid-in Shares; and (b) any additional Paid-in and Payable Shares to be determined by the Governing Council by a specified majority in a manner consistent with the allocation of Shares in the above schedule.

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UNCTAD activities in relation to the question of a complementary facility for commodity-related shortfalls in export earnings[2]

UNCTAD's recent and current activities at both intergovernmental and secretariat levels in relation to a complementary facility for commodity-related shortfalls in export earnings are based on resolution 125(V), adopted by the Conference at its fifth session, in 1979, and resolution 157 (VI), adopted by the Conference at its sixth session, in 1983.

The Conference, in its resolution 125(V), requested the Secretary-General of UNCTAD "in consultation with the International Montary Fund, to prepare a detailed study for the operation of a complementary facility to compensate for shortfalls in earnings of each commodity, taking account of its financial requirements, possible sources of financing, its financial feasibility, institutional arrangements and the modalities and considerations that would provide adequate compensation in real terms of developing countries, paying attention in particular to the situation of the least developed countries. This facility should be additional to the improvement of the Compensatory Financing Facility of the International Monetary Fund, other facilities and to actions taken under the Integrated Programme of Commodities to deal with the problem of price stabilization in real terms."

Subsequently, on the basis of secretariat studies (TD/B/C.1/234, 237 and 243 and TD/B/AC.37/3), intergovernmental consideration of the question was carried out within the Committee on Commodities at its first special session (8-12 February 1982) and at its tenth session (26 January - 8 February 1983).

The Conference, at its sixth session, in resolution 157(VI), requested the Secretary-General of UNCTAD to convene, after consultation with interested Governments, an expert group on compensatory financing of export earnings shortfalls. The group was instructed to consider, without prejudice to an eventual decision on appropriate follow-up action that might be taken by the Trade and Development Board, the following:

"(a) The need for an additional complementary facility to compensate for the export earnings shortfalls of developing countries, bearing in mind the needs of those countries which are most dependent on commodity exports, particularly the least developed among them;

(b) The nature of an additional complementary facility;

(c) Sources of finance for an additional complementary facility;

(d) The operational rules and modalities of an additional complementary facility;

(e) The relationship of an additional complementary facility to existing facilities and intergovernmental organizations ...."

The Expert Group on the Compensatory Financing of Export Earnings Shortfalls held three sessions (9-13 April; 30 July-3 August; and 1-2 November) in 1984. Its report is contained in document TD/B/1029/Rev.1 issued as United Nations publication No. E.85.II.9.3. Of particular interest are the summary and conclusions presented in Chapter VII of the report and, in particular, paragraphs 131-132 in which the Group has indicated its views with respect to the essential characteristics of a prototype commodity-specific facility which links the users of compensatory finance to the needs

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of supply adjustment, and with respect to the way in which such a facility might be instituted. The Group envisaged that all primary commodities (i.e. those included in SITC sections 0, 1, 2 and 4 and division 68) would be eligible, with the exception of fuels, gold, diamonds and precious stones.

The Trade and Development Board, at its fourteenth special session, held from 10 to 15 June and on 27 June 1985 for the purpose of considering follow-up action that might be taken, decided on a number of follow-up steps, including:

(a) the convening of an intergovernmental group of experts which would continue the analysis of the need for a new facility as well as undertake further work on the rules and modalities of any additional complementary facility, and complete its work not later than June 1986 and report to the special session of the Trade and Development Board;

(b) without prejudice to an eventual outcome, the convening of a special session of the Trade and Development Board, to be held by the autumn of 1986, scheduled for planning purposes for a period of two weeks, to decide on requisite follow-up action, including the possible convening of a negotiating conference on an additional complementary facility.

The full text of the Board's decision is reproduced in the Board's report of its fourteenth special session (at present available as document UNCTAD/CA/2542, subsequently to be distributed in *Official Records of the General Assembly, Fortieth Session, Supplement No.15* (A/40/15), vol.I.).

UNCTAD proposal for a system of compensatory financing of export earnings shortfalls[10]

In view of the importance of earnings from commodities for developing countries and the high instability of these earnings, UNCTAD has developed a new model of compensatory financing of export earnings shortfalls. This system exists currently in the form of a proposal by a group of experts convened by the Secretary-General of the UNCTAD in response to the relevant request in resolution 157(VI) of 2 July 1983 of the United Nations Conference on Trade and Development. The tasks given to the Expert Group have been enlisted in the previous section.

As a basis for the development of the new system, the expert group was requested to examine, *inter alia*, the nature and causes of export earnings stabilization on commodity markets, the financial and economic costs of stabilizing export earnings, and the possible stabilizing influence of commodity agreements and the Common Fund for Commodities.

The expert group arrived at the conclusion that, whilst instability in commodity markets is due to both demand and supply factors, supply instability at the country level is a principal source of export earnings shortfalls of developing countries. It defines, therefore, its new compensatory financing facility to be a commodity-specific facility which links the uses of compensatory financing to the needs of supply adjustment in a way that is consistent with stability in the world commodity economy.

The four basic features of the prototype presented by the group of experts are:

(1) availability of funds provided by the facility would be linked to shortfalls in proceeds of specific commodities;

(2) the use of these funds would be linked to the causes of instability in commodity sectors so as to reduce the extent of this instability;

(3) the uses would be consistent with international commodity objectives and arrangements;

(4) the facility would be operated basically on self-financing, commercial principles.

The main features of the new facility can be summarized as follows: Whereas membership would be open to all States, access to loans would be restricted to developing countries. The facility would cover all primary commodities, i.e. those included in Standard International Trade Classification (SITC), sections 0, 1, 2, 4 and division 68, except fuels, gold, diamonds and precious stones.

As to the capital structure of the facility, the ratio of paid-in capital would be a minimum of 10 per cent with special provisions to be made for the phasing of the subscription of paid-in capital. As regards the currency of capital subscription, half of the members' paid-in capital should be in "usable currencies", half in domestic currency. The distribution of contributions should be along the lines of that of the Common Fund for Commodities. Besides these governmental contributions which would be the source of the facility's equity capital, the facility should be empowered to accept voluntary contributions from governments, international financial institutions and other acceptable sources for approved uses. As regards borrowed capital, the facility would need access to commercial banks for short-term loans, and the public and private sectors as long-term sources. Another possibility would be co-financing with other international financial institutions, such as regional development banks, or with private sources of capital.

The determination of export earnings shortfalls would be based on the following criteria:

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(1) calculation of shortfalls on a gross (i.e. commodity-by-commodity) basis;

(2) reference period of 10 years; use of an exponential or linear function to measure the trends in commodity earnings;

(3) nominal values to be used for practical reasons;

(4) use of a dependency threshold (i.e. minimum level for a country's dependence on a commodity for total merchandise export earnings), as well as a trigger threshold (i.e. minimum percentage shortfall) requirements for access to loans.

A necessary feature of the programme would be a process of discussion between the facility and the countries concerned on the causes of instability and the proposed corrective measures for which financial assistance is sought in order to achieve a written agreement on a multi-year commodity stabilization programme. These commodity stabilization programmes should include details on the agreed use of the resources for which there is a wide variety. Moreover, they should specify the mechanisms for executing the measures proposed and provide for specific monitorable actions. The facility should also be empowered to offer technical assistance to countries interested in such assistance.

While prior recourse to other systems of compensatory financing such as the International Monetary Fund's Compensatory Financing Facility (IMF's CFF) or the European Economic Commission-African, Caribbean and Pacific Countries (EEC-ACP)'s STABEX, should not be a pre-requisite for loans from the proposed facility, double compensation should be avoided. The preferable solution for that would be to allow any facility to treat commodity-related drawings from other facilities as export earnings of the commodities concerned for the period in question when calculating shortfalls under its own rules.

As to the repayment criteria it is proposed to blend a fixed amortization schedule with an overage criterion, where repayments are accelerated to an agreed extent whenever overages reach a pre-determined level. Concessionality should be accorded to the least developed and other low-income countries, subject to the reception of voluntary contributions for this purpose. Such preferential treatment may consist of lower dependency and trigger thresholds, greater availability of grants, reduced interest charges, more liberal repayment terms and greater access to technical assistance.

As to the institutional options the group of experts felt that the establishment of a new international organization should be avoided. It suggested that a suitable location would be in the Common Fund for Commodities, as a third window with its own additional paid-in capital and callable capital, borrowing and lending rules. If this cannot be realized, the location of the facility in the World Bank would offer some advantages.

Depending on the institutional structure of the new facility, it would have to establish a close relationship to international institutions whose functions are complementary with its own, such as

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the World Bank, the Common Fund, UNCTAD, UNDP, Food and Agricultural Organization (FAO), International Fund for Agricultural Development (IFAD) and international commodity organizations, the most crucial links being those to existing facilities dealing with compensation of export earnings shortfalls, namely, the IMF's CFF and EEC-ACP's STABEX.

UNCTAD activities in relation to the processing, marketing and distribution of commodities of export interest to developing countries [2]

UNCTAD's recent and current activities at both intergovernmental and secretariat levels in relation to processing, marketing and distribution of commodities flow basically out of resolution 124(V), adopted by the Conference at its fifth session, in 1979, and resolution 156 (VI), adopted by the Conference at its sixth session, in 1983.

The Conference, at its 1979 session, agreed to establish a framework of international co-operation for expanding in developing countries the processing of primary commodities and the export of processed goods, and to establish a framework of international co-operation with a view to increasing the participation of developing countries in the marketing and distribution of their commodity exports and in their earnings from such activities; it agreed to take certain specified elements into account in the formulation of such frameworks; and it requested the Secretary-General of UNCTAD to undertake systematic and thorough studies in these fields in respect of the commodities included in the indicative list of commodities in the Ingegrated Programme for Commodities.

The UNCTAD secretariat has subsequently prepared and submitted to governments 13 studies on the processing and/or marketing of individual IPC commodities - including copper (TD/B/C.1/PSC/30/Rev.1), and manganese (TD/B/C.1/PSC/20/Rev.1) - a series of reports on the general subject of frameworks of international co-operation, and two studies on contractual marketing and on the operation of commodity exchanges. The most recent secretariat reports on the general subject of elements of frameworks of international co-operation are, in relation to processing, document TD/B/C.1/253 and, in relation to marketing and distribution, document TD/B/C.1/252.

Extensive intergovernmental discussions have been held within the Permanent Sub-Committee on Commodities, at its second session 1-8 February 1982), its third session (17-26 January 1983) and its fourth session (14-22 January 1985), and within the Committee on Commodities, at its tenth session (26 January - 8 February 1983) and at its second special session (21-25 January 1985). The last-mentioned meeting was devoted exclusively to issues concerning processing, marketing and distribution. Its report is contained in document TD/B/C.1 S-II/Misc.2 (to be issued subsequently in printed form as TD/B/1041 - TD/B/C.1/266).

Agreement has not yet been reached on the content or modalities of the international co-operation frameworks envisaged in the relevant mandates of the Conference. Accordingly, intergovernmental discussions are to be continued with the objective of establishing such frameworks as soon as possible. To this end, the Committee on Commodities, in accordance with its decision 20(S-II) of 25 January 1985, will establish at its next (eleventh) regular session, scheduled to be held from

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2 to 13 December 1985, a sessional committee to pursue its elaboration of the elements of frameworks for international co-operation in the fields of processing, marketing and distribution, including transportation, of commodities of export interest to developing countries, in accordance with Conference resolution 156 (VI).

UNCTAD proposal to promote international co-operation in the fields of processing, marketing and distribution, including transportation of commodities of export interests to the developing countries 11/

UNCTAD's efforts in this area focus on the elaboration of the elements of the framework for international co-operation in the above fields. In response to the decision of the United Nations Conference on Trade and Development to assist governments in elaborating the elements of such a framework, the UNCTAD Secretariat has prepared reports, the general plan of which is to present the nature of the problem, to evaluate existing approaches and to propose additional or modified arrangements that could meet identified gaps and deficiencies. Emphasis is given to the question of training, since study of the problem has shown this to be a pervasive need common to most of the listed elements of the agreed frameworks of international co-operation.

With regard to processing, the following issues are emphasised:

1. Facilitation of the process of redeployment of productive capacities for commodity processing industries to developing countries including adjustment assistance.

2. Improvement of the competitiveness of natural products competing with synthetics and the consideration of measures to harmonise, where appropriate, the production of synthetics and substitutes in developing countries with the supply of natural products produced in developing countries.

3. Increasing market outlets for processed and semi-processed commodities exported by developing countries, inter alia, by commitments within trade negotiations and whenever appropriate within the framework of individual commodity negotiations.

4. Adequate financial resources for expanding primary commodity processing in developing countries, taking account of needs for increased allocation of financial resources, both loan and equity capital through international financial institutions, especially to the least developed among developing countries.

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5. Liberalization of market access particularly in developed countries for primary and processed product from developing countries.

With regard to marketing and distribution, the following issues are emphasised:

1. Improvement in market transparency and action to improve the functioning of commodity exchanges.
2. Increased technical and financial support for the development of national marketing and distribution systems.
3. Contracts, practices and arrangements governing the marketing of commodities included in the Integrated Programme for Commodities of the United Nations Conference on Trade and Development.
4. Elimination of barriers to fair competition between marketing enterprises of developed and developing countries.

Summaries of the various proposals made in these reports are presented below. It is worth mentioning that the framework as presented in these reports are intended essentially to make more open, competitive, transparent and equitable the international economic environment within which the viability of any particular project in developing countries is assessed, and decisions are made, rather than to evaluate the feasibility of any particular project.

Processing

1. Redeployment

(a) Production and trade

(i) In developed countries phasing out of subsidies and commitment not to re-introduce subsidies to the processing industries concerned and limitation in the scope and duration of adjustment measures; (ii) agreement on the principles of temporary structural adjustment assistance and infant industry assistance; (iii) recognition of, and adherence to, the principle that any advantage, favour or privilege granted by a developed country to imports of any processed commodity from other developed countries should be extended automatically to the like processed commodity originating in a developing country; (iv) assurance to developing countries of a fair and reasonable share of the market; (v) the linking of supply contracts for raw materials to purchase commitments by developed countries; (vi) policy co-ordination at the international level and increased transparency in trade relations and government policies.

(b) Technology

(i) Expansion of the activities of UNIDO in the area of monitoring and disseminating of information on sources and costs of processing technology; (ii) the conclusion of negotiations on "The draft international code of conduct on transfer of technology" and "Common approaches to laws and regulations of the transfer and acquisition of technology"; (iii) international arrangement for the collective procurement of technology; (iv) establishment of an International Technology Bank within the United Nations system for the purchase of appropriate technology (including patents, licences, trademarks, models, designs, manuals, operating instructions, technical advice and assistance necessary to assemble, maintain and operate a viable system) and its dissemination to interested countries; (v) technical assistance and training for the adaptation of processing technology in line with local conditions; (vi) co-operation for collective research in accordance with the Buenos Aires Plan of Action for Promoting and Implementing Technical Co-operation among Developing Countries.

2. Improvement of competitiveness of natural products

(a) Promotion of demand by:

(i) Emphasizing their "natural", technical and other characteristics which are lacking in synthetics, supplemented by efforts for the development of new end uses; (ii) quality improvement, price and supply stabilization schemes, standardization of raw materials and the use of appropriate brand names to facilitate trade and upgrade the image of natural products, expansion of trade among developing countries; (iii) reduction in costs and prices by improvement in cultivation methods, seeds or plants qualities, and harvesting techniques, farm management, packaging, etc., liberalization of tariff and non-tariff barriers on imports of natural products; (iv) reduction of the risk of investments in natural products by greater assurance about the level of future demand and market outlets, e.g. by long-term purchase and sales agreements.

3. Increased market outlets for processed and semi-processed commodities by:

(i) Commitments by governments in their trade negotiations by adoption of an over-all principle and its implementation through trade treaties or agreements; (ii) incentives to private industry to adjust the structure of imports to attain objectives (e.g. fiscal incentives); (iii) government procurement programmes to encourage imports in processed form; (iv) assistance in the areas of information, exhibitions, advertising, etc., for fully processed commodities and consent to the development of standards for commodities, co-ordination of packaging and sanitary regulations; (v) commitments by governments of developing consuming countries to increase market outlets for semi- and fully-processed commodities from other developing countries; (vi) inclusion of a provision in any international agreement or arrangements that consumers commit themselves to take steps to increase market outlets for processed commodities supplied from developing countries.

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4. Adequate financial resources for expanding primary commodity processing

(i) Increasing the availability of funds from international financial institutions by augmenting their lending capacity; (ii) restoration of the capital resources of the International Development Association (IDA) at least to its former level in real terms; (iii) authorization to be given to IDA to allow a larger proportion of its credits to be used for the processing of primary commodities in developing countries; (iv) increased co-operation between the World Bank group and other agencies lending for development. The objectives of such co-operation might include a fund for feasibility studies, appropriate mechanisms for encouraging syndication of lenders and for arranging the channelling of investment project proposals to potential investors, and the establishment of arrangements and procedures for promoting the financing of joint ventures between States, private and international financial institutions and nationalized enterprises; (v) examination of the possible establishment of a special financing facility for the processing of natural resources located in developing countries, in particular minerals and metals, as an affiliate of the World Bank; (vi) stepping-up of co-financing of multilateral financial institutions with commercial banks in order to make available additional resources for projects in developing countries; (vii) re-financing of medium and long-term export credits by an International Export Credit Guarantee Facility as proposed by UNCTAD; (viii) an increase, in real terms, in official development assistance to support developing countries' efforts to attain their development goals based on the processing of their natural resources.

5. Liberalization of market access by

(i) a progressive reduction or elimination of trade barriers; (ii) international agreement on the gradual reduction and elimination, within

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a time-bound frame of trade barriers (tariffs, quantitative restrictions and other measures having similar effects) on processed products exported by developing countries; (iii) an undertaking by developed countries to grant to the semi-processed or processed forms of commodities imported from developing countries at least the same reduced margins of protection accorded to unprocessed primary commodities imported from them. A specific commitment on the reduction of trade barrier escalation for processed commodity-based products from developing countries which could be concluded as an addendum to the GSP, in the form of a special commodity protocol; (iv) an undertaking by developed countries maintaining protection for certain commodities to reserve specific shares of total consumption for developing countries.

Training for Processing

Increased training by

(i) international co-ordination, rationalization and promotion of training activities in the commodities field to be organized by an Institute of Commodity Trade; (ii) establishment of a co-ordinating body for the collection and transmission of information to governments on training opportunities for the monitoring and evaluation of training facilities, etc. This body could be established either within an existing international organization or as part of the proposed Institute of Commodity Trade (ICT).

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Marketing and Distribution

1. Market transparency

(a) Improvement in market transparency

- Public inquiry on managed adjustment
- Body to review international commitment or changes
- Internationally agreed criteria on government assistance to industry
- International co-ordination of industrial policy
- Developing countries to offer incentives to private and state corporations to provide more information
- Follow-up by a United Nations body

(b) Commodity exchanges

- Developing producing countries on governing boards of the exchanges
- Special body on international legislation and surveillance
- Better information on rules and regulations
- Better information on national surveillance
- Better training facilities
- Reduced initial margins for producers
- Repayment of credit margins or payment of interest
- Options for specific commodities
- Assistance for setting up new exchanges in interested developing countries

2. Technical and financial support for national marketing

- Identification of needs
- Technical assistance
- Financial support
- Training Institute for Commodity Trade, to develop over-all concept and approach

3. Contracts

- Model contracts and regulations, negotiating manuals, guidelines
- Monitoring of contracts, etc. including countertrade
- Assistance on technical aspects
- Roster of experts

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4. Barriers

(a) Furthering of ongoing initiatives

- Apply Set of Multilaterally Agreed Equitable Principles and Rules for the Control of Restrictive Business Practices to commodities.
- Apply international code of conduct on the transfer of technology to commodities.
- Apply code of conduct for TNCs to transnational marketing firms.
- Accept and implement existing standards for all primary and processed commodities (CODEX and/or ISO): international arbritation system.
- Code of Conduct for Liner Conferences: further work on open registries and bulk carriers.

(b) New initiatives

- Code of conduct to prevent abuses in market power, including global anti-trust.
- Code of conduct on truth in advertising, including emphasis on promotion of generic advertising for commodities.

Training for Marketing and Distribution

- Training Institute for Commodity Trade.

Implementation of the framework for international co-operation in the field of processing naturally entails actions at different levels. For example, at the international level desirable action would include measures designed to encourage the redeployment of productive capacities and to facilitate an increased flow of finance to developing countries on suitable terms. At the regional level, co-operation among developing countries in the complementary use of natural resources would widen the range and improve the feasibility of processing industries in some fields. So would the development of regional approaches to the transfer and development of technology. At the national level, some harmonization among developing countries of foreign investment legislation and conditions would facilitate the objective of increasing financial flows on suitable terms. Similarly, the liberalization of national trade regimes and the removal of discrimination against processed products among developing countries would be a means of encouraging the increased participation of developing countries in trade in these products.

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Implementation of a framework for international co-operation in the field of marketing and distribution would also entail action at different levels. For example, at the international level arrangements to ensure increased market transparency and appropriate international behaviour on the part of trading corporations and commodity exchanges to prevent abuses of market power would be needed. At the regional level co-operation among developing countries might improve the range and feasibility of marketing ventures, including the operation of terminal markets, and better exploit the reservoir of technical skills and expertise available in developing countries. At the national level some co-ordination among developing countries in such areas as contractual marketing and shipping could improve their gains from trade. Similarly, among developed countries effective national action in regard to the surveillance of trading corporations, of the application of rules and restrictive practices and of the use of appropriate product standards would help to prevent discrimination against the entry of developing countries.

Processing and marketing of copper and manganese

UNCTAD has prepared studies on the processing, marketing and distribution of specific commodities and endeavoured to identify areas for international co-operation in this respect. Two of the metals covered by these studies are of relevance for the work of Special Commission 1, namely, copper and manganese.

The study of the UNCTAD secretariat on copper presents, first, an analytical discussion on:

- production, trade and consumption of copper;
- industry structure;
- pricing;
- commercial barriers and transportation;
- longer-term prospects for developing countries.

As specific areas for international co-operation it identifies price stabilization, removal of barriers to trade, improvement in the functioning of commodity exchanges, review of the contract conditions under which copper is sold and increased market transparency as well as technical and financial assistance. Other features are the exchange of information between developing countries, joint research and development (R & D) projects that could be eligible for international assistance and the improved availability of capital.

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Similarly, the study of the UNCTAD Secretariat on manganese embarks on an alaysis of:

- the market for new and processed forms;
- trade-related barriers to the expansion of processing and marketing for manganese;
- industry and market structure;
- pricing of manganese;
- long-term prospects for processed-form exports from developing countries.

In the light of the major issues the proposals for international action put forward by the study are the following:

1. Market distribution, including
   - (i) the establishment of minimum target shares for imports from developing countries, to be attained over some projected period;
   - (ii) purchase commitments for an essential part or the whole of their output as a means of encouraging the development of new mines in developing countries which have outlined viable deposits. This would reduce the financial risk to those countries and would facilitate negotiations with financial institutions to provide the necessary funding;
   - (iii) similar commitments to encourage an expansion of output in manganese-producing developing countries.

2. Relocation of manganese processing facilities to those countries which have failed so far to establish such facilities but are in a position to provide the necessary infrastructure and which propose economically viable projects.

3. Producer-consumer arrangements to encourage greater competition through market transparency.

IV. United Nations Industrial Development Organization (UNIDO)

Restructuring of Non-ferrous Metals Industries[12]

The efforts of the UNIDO in the field of non-ferrous metals are reflected in the report on its Expert Group Meeting on the Restructuring of Non-ferrous Metals Industries which was convened in March 1985, and the respective background papers prepared by the UNIDO Secretariat for this occasion. The meeting was considered to be the final step in preparation of the possible holding of the First Consultation on the Non-ferrous Metals Industries during the 1986-1987 biennium. The papers presented focus on the salient features of six non-ferrous metals industries in developing countries, two of which, namely, copper and nickel, are of relevance for the work of Special Commission 1.

Based on a review of the pertinent data, economic as well as non-economic, such as the evolution of the non-ferrous metals industries, the effect of the world economic crisis on the non-ferrous metals industries, the structure of the non-ferrous metals industries, demand projections, etc., the papers deal with restructuring of those industries as a response to the uncertain or poor outlooks on the future of the non-ferrous metal markets. According to the report and the studies presented, the major means of such a restructuring process must be the further processing of non-ferrous minerals in developing countries. By making this suggestion the UNIDO Secretariat confirms a trend whereby increased processing of minerals has become a key element in developing countries' proposals for a New International Economic Order (NIEO).

The UNIDO Secretariat cites as the primary reasons why developing countries have advocated increased local mineral processing:

- industrialization strategies based on the use of local raw materials;

- reduction of dependence on the industrialized countries;

- creation of opportunities for the training of nationals and the development of skills which can be used in other sectors of the economy;

- limitation of transnational corporations' ability to engage in transfer pricing;

- capturing a greater share of the economic rent from mineral production; and

- the hope of obtaining access to capital markets which might not otherwise be available.

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Discussing the prospects of further processing in developing countries, the UNIDO Secretariat takes note of the fact that in view of the limited success developing countries have had with import-substitution strategies for industrialization and the limited number of countries that have been able to successfully pursue an export-oriented strategy for industrialization based on manufacturing or assembly operations, strategies of resource based industrialization have been claiming increasing attention from developing country planners. Two variations of such strategies or the combination of them are under discussion. One which can be called "primary export processing" is based on the assumption that more processing of, and hence, more value added from primary product exports will speed up the overall development of an economy. The second strategy, which can be called "basic goods production", concentrates on the use of agricultural and natural resource products not primarily for export, but rather for domestic consumption. An additional argument is the expectation of spin-off effects in other sectors of the economy.

It is recognized, however, that in planning an integrated approach for developing their non-ferrous industries, developing countries have to take into account the specific economic parameters of their situation and the respective industries such as the following: capital costs, transport costs, environmental costs, energy costs, complementary inputs, labour costs, infrastructure, economic side effects or externalities, etc. According to the UNIDO Secretariat, the various economic factors do not always interact as to produce an entirely predictable result. While they will show the potential for a high rate of return for some developing country mineral processing projects there exist some barriers, natural and artificial, which are likely to hamper mineral processing in developing countries. These barriers are seen to be the tariff structures of the industrialized countries, market distortion by transnational corporations, marketing problems, the rapid technological change in the respective industries and lack of know-how, and the problem of minimum efficient plant sizes in developing countries.

In the light of the overall goals, objectives and themes examined by the first meeting of experts on the restructuring of the non-ferrous metals industries, the following conclusions and recommendations were reached:

(a) There is a need to analyse the possibilities for a greater degree of processing of non-ferrous metals in the developing countries within the framework of an overall concept of national, sub-regional and regional development that takes account of the inter-relations of the non-ferrous metals industries with other related industrial sectors, such as capital goods, iron and steel, construction, etc.;

(b) There is a need to promote, within the context of an overall process of industrialization at the national, sub-regional and regional levels, integrated forms of development of the non-ferrous metals industries which are based on a detailed understanding of the ways in which the demand for final products affects the productive processes. Within this perspective of development, there is a need to define the type and degree of integration of the non-ferrous metals industries that is desirable and possible at the national, sub-regional and regional levels, as well as to examine the possibilities for most effectively using the international markets;

(c) Because not all non-ferrous metal products can, in the near and medium term, be effectively utilized in the producing countries and regions, it will be necessary to promote the expansion of national and regional markets, in addition to developing and expanding new uses of such products world-wide. In this context, attention should be given to recently developed and new approaches, including for example, the location of certain joint processing and manufacturing plants in the principal consuming countries, where appropriate and feasible, with the aim of removing barriers to sales in such markets and thereby gaining technological and managerial expertise;

(d) Because of the changes in investment patterns which have appeared in the non-ferrous metals sector and the current severe restrictions on foreign exchange which developing countries are experiencing, there is a need to put into practice new methods of financing, which will permit a more effective use of the resources available to developing countries;

(e) There is a need to examine and develop, in each of the non-ferrous metals industries, alternative technologies and practices which are appropriate to the scale of developing countries' economies and to the level and type of resources available to such countries, and which protect the environment and the health and safety of workers;

(f) There is a need to examine past and present efforts of co-operation and to put into practice new forms of co-operation among developing countries and between developing and developed countries, in order to promote a more effective process of integrated industrial development in the developing world, taking due consideration of the developed countries' need for security of supply;

(g) The possibility and desirability of centralizing information available within the United Nations system in the field of non-ferrous metals should be analysed with the aim of avoiding duplication of effort and achieving the maximum feasible dissemination of information which may already be available within the system;

(h) As part of the process of preparation for the First Consultation on the Non-ferrous Metals Industries, UNIDO should promote closer relations with the producer associations in the non-ferrous metals field;

(i) UNIDO, in its preparations for the First Consultation on the Non-ferrous Metals Industries, should sponsor meetings of experts at the sub-regional and regional level, with the aim of examining the possibilities, advantages and barriers to an integrated and more self-reliant development of the non-ferrous metals industries at the sub-regional and national levels, as well as examining new forms of co-operation, financing and alternative technologies;

(j) UNIDO should prepare appropriate documentation for the expert meetings and, in this context, should co-ordinate its efforts with universities and other institutions which are undertaking work in the non-ferrous metals sector at the global, regional and sub-regional levels.

V. United Nations Environment Programme (UNEP)[13]

Through publishing appropriate and adapted advice on environmental management in the copper and nickel industries, leading to cost-effective reduction of environmental conflict, the UNEP has provided support to land-based metal mining and processing activities in certain developing countries. However, this was in no way in relation to the potential change in resource sources introduced by nodules exploitation from the international sea-bed.

UNEP Industry and Environment Office Activities on selected non-ferrous metal industries[14]

In accordance with the decision of the UNEP Governing Council at its 5th session, the environmental aspects of a number of major industrial sectors are being reviewed, amongst which are the non-ferrous metals industries. Initially an examination was made of the aluminium industry. Subsequently the following metals were selected for review: lead, zinc, cadmium, copper and nickel.

A methodology, agreed by the UNEP Governing Council, was used for this review, according to which the Secretariat established a consultative process amongst the main interested parties, namely: Governments, industry and international institutions concerned, including workers' organizations. Through this process a wide range of information on the environmental aspects of the chosen five non-ferrous metals was collected and views as to the main environmental problems and issues were obtained.

At the same time several specialized background reports were prepared in close co-operation with a number of partners in the consultative process. The information collected was used to draft a Secretariat report on the environmental aspects of the lead, zinc, cadmium, copper and nickel industries. The draft report, which provided an overview of the environmental aspects and highlighted the main environmental issues involved, was examined at a workshop of experts from the main interested parties, held in April 1981. The main tasks of the workshop were to:

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(a) review, confirm and critique the report;

(b) establish priorities amongst chosen issues;

(c) define a programme of activities whereby, during a period of one or two years, outstanding issues may be assessed and evaluated, as far as possible at the initiative of appropriate institutions.

The environmental issues were clustered into four areas, namely:

I. Environmental management of ore mining and processing, including mine site rehabilitation;

II. Environmental management of smelting and refining of lead, zinc and cadmium;

III. Environmental management of smelting and refining of copper and nickel;

IV. Environmental aspects of the uses of cadmium, copper, lead, nickel and zinc.

A summary of these issues was given in Annex I to the agenda for the workshop. The conclusions of the workshop are given in the Record issued after circulation for comment and approval to participants.[15]

Subsequent to the Workshop, the Secretariat Report was revised and distributed for examination and comments by correspondence. From this Secretariat Report, an Overview document on "Environmental Aspects of Selected Non-Ferrous Metals Industries" was derived, and was published in 1985.[16]

The UNEP Industry and Environment Office publishes a quarterly newsletter entitled "Industry and Environment". An issue on Non-Ferrous Metals was published in 1982.[17]

UNEP is encouraging "sustainable development", in harmony with the environment, and is promoting prevention of negative environmental impacts by means of cost-effective measures rather than remedies to environmental damage after it has occurred.

C. REGIONAL COMMISSIONS

I. Economic Commission for Africa (ECA) [18]

The Resources of the Sea Unit recently established within the Natural Resources Division of the ECA is particularly concerned with the progress made in the implementation of the policies defined in the framework of the United Nations Convention on the Law of the Sea and of the work of the Preparatory Commission for the International Sea-Bed Authority.

Concerning the recent activities of the ECA in these areas, the African Intergovernmental Meeting on Aspects of Applications of the Provisions of the United Nations Convention on the Law of the Sea took place in September 1984. Attention is drawn to the report of the meeting.[19]

With respect to the negative impact which sea-bed mining could have on the land-based operations of African countries likely to be adversely affected by sea-bed mining, the ECA expresses its full support for a study on possible measures to be taken by such countries.

Although the ECA Secretariat has not yet succeeded to develop appropriate measures for dealing with the adverse repercussions of sea-bed mining on mineral resources in Africa, it intends to look into such possibilities as soon as its Resources of the Sea Unit becomes fully operational and is adequately staffed.

Marine mineral resources against land based mineral resources in Africa[20]

Recent trends in sea-bed mineral exploration indicate that some mineral commodities in addition to those already mined on the continental shelf at shallow depth, namely black sands (monazite, rutile, zircon), diamonds, and industrial raw materials such as sand and gravel, might in the coming decades be recovered at great depth in the oceans.

From the research work carried out world-wide in all oceans over the last 25 years, it would appear that cobalt, copper, nickel and managanese resources from ocean floor nodules would be in immediate economic competition with the same range of mineral commodities currently exploited in land-based mines.

Possible target areas[21] for future pre-feasibility work, including trial mining, possibly followed by commercial operations are foreseen within the next few decades or more rapidly should economic conditions improve and, in particular, become buoyant.

Among preselected favourable areas[22] resulting from intensive research work undertaken by no less than six international western consortia including leading mining and oil companies, and further independent attempts by Japanese and French groups, as well as India and USSR, the North Pacific area is known to conceal several dozen mine sites. In addition, the Indian Ocean is also known to offer mineable concentrations which might be exploitable. The depth at which the best occurrences have been identified is between 4,000 and 5,000 meters. Some 500 million dollars

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have been invested in those various investigations and would require additional funds of the order of one billion dollars to set up a production unit including land-based processing facilities.

Such a project would be capable of bringing to the surface some 3 million metric tons of dry nodules per annum with a mineral content of cobalt, copper, nickel and manganese valued at 2.2 billion dollars/year. It is estimated that a single venture of this kind could produce as much cobalt per year as Zambia and Zaire together. The capital outlay compares rather favourably with conventional land-based mines, for instance, large polymetallic copper/gold/silver/molybdenite deposits which require some 800 to 1,000 million dollars in capital investment for an annual mineral output of 400 to 500 million dollars.

In addition to the potentiality for future deep ocean mining, more shallow mineralizations have been identified in the Exclusive Economic Zone (EEZ) in the Pacific island nations, in particular within the 200 nautical mile zone of the Hawaiian Archipelago and some smaller islands in the area.

The deposits are encountered at depth between 800 and 2,000 meters only, presenting fewer technical problems in respect of mining operation than the deep sea deposits and are characterized by considerably higher grades in cobalt, though copper and nickel contents are lower and manganese is similar to that in the deep ocean nodules.

There is a third type of sea-bed mineral occurence and a possible substitute for conventional mining namely hot brine deposits characterized by economically recoverable arsenic, zinc, gold, nickel and silver quantities which has reached an even more advanced stage of investigation as it underwent lengthy surveys, evaluations and was even subjected to trial mining. These deposits which are under consideration for trial mining in the coming decade are located in the section of the Red Sea between South Arabia and Sudan. Similar discoveries which are recorded by the USA somewhere in the Pacific are under investigation.

Even though commercial development is not anticipated in the near future it is nevertheless obvious that a change in commodity trends coupled with more favourable world market prices and technical breakthroughs in some aspects related to mining and processing might improve conditions in such a way that commercial ventures would become viable. In any event, it would appear that sea-bed mining in any of the aforementioned types of deposits identified so far, will become a very serious challenge to conventional land-based mining operations for the mineral commodities which have been identified so far in such deposits.

Strategy

The current negotiations at the last session of UNCLOS III in 1982 did not succeed in reaching a consensus between developing and industrial nations on a regime to govern the deep-sea mining operations and protect adequately developing countries whose land-based mines would be prejudiced by the dumping effects resulting from sea-bed mining.

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In this connection, while the aforementioned negotiations should be actively pursued, new avenues to this problem in view of the detrimental consequences it will inevitably bring about for the African mineral sector, should be explored.

African countries whose mineral outputs would have to compete with those from sea-bed operations could consider the establishment of a mining fund into which contributions would be paid at a rate to be agreed and determined by African countries concerned and based on the world market value of the commodities which would be affected by sea-bed mining.

The scheme would be additional to the one called the Enterprise under negotiation in the Convention on the Law of the Sea and whose mechanisms are being designed in order to mitigate against such detrimental impacts for land-based mines.

The fund when adequately stocked could be utilized for a range of objectives in the best interest of the countries contributing to it and, for instance, enable the following main actions:

(i) participation in deep sea exploration and mining ventures through direct investment in international consortia in order to be more involved in this new development in international waters;

(ii) providing under buffer fund arrangements the required subsidies to stabilize commodity prices for African producers when mineral dumping becomes a threat to African land-based mines;

(iii) financial assistance to land-based mines to improve mining, cover investment requirements and make the operations more competitive;

(iv) promote African participation in research and mineral investigation in the Exclusive Economic Zone of the African region.

To illustrate the scope of financial resources which could be set aside under such scheme, a tentative exercise based on a contribution of 1 per cent of market value derived from member States producing copper, cobalt, manganese and nickel, pro rata to their annual output reveals that an annual amount of some US$23 million could be raised:

	Africa's annual production (metric tons) in 1983*	Value (million US$)
Copper	1,130,000	1,914.22
Cobalt	8,700	114.84
Manganese	1,800,000	117.00
Nickel	28,300	199.23
		2,345.29

*Source: Survey of Economic and Social Conditions in Africa 1983-84 (E/ECA/CM.11/16).

Over a period of 20 to 25 years, which is the likely time span before sea-bed mining will come on stream, the mining fund would have cumulative assets amounting to some US$575 million without the accrued interest over that period.

The scheme should not be restricted to the sole countries whose production will be affected by these new developments but could be broadened to encompass other commodities for which a subsidy system would have to be designed.

The scheme might also be attractive for existing African banking and financing organizations which are interested in supporting Africa's mineral economic sector.

Given the indispensible and long term support of the member States concerned, the proposed scheme could constitute a positive step towards the establishment of a common fund including the soft commodities (wheat, cocoa, coffee, rubber, etc.) which appears as a long outstanding issue in UNCTAD's efforts to conclude an international commodity agreement with a view to protecting and stabilizing commodity prices, in particular, in the interest of third world countries.

II. Economic and Social Commission for Asia and the Pacific (ESCAP)[23]

With regard to the ESCAP's activities in mineral resources development in the region, the mineral programme is primarily focused on the promotion of systematic geophysical, geological and geochemical surveys to generate the essential information and data on mineral occurrences and deposits, their mineral composition, content and mineability. It is largely carried out through development and strengthening of national institutional capabilities and facilities for conducting mineral resources exploration. Towards this end, the Regional Mineral Resources Development Centre (RMRDC) has been established under ESCAP auspices since 1978. The primary objectives of the Centre include provision of technical advisory services and organization of specialized training in various aspects of mineral resources development.

In the particular context of the non-ferrous mineral industry, advisory services by RMRDC specialists on exploration and development of base metals, such as copper, are being provided to countries in the region on a continuing basis. Similarly for the ferro-alloy metals such as nickel, cobalt and manganese, technical advisory services for exploration and development are provided. The region as a whole is a significant producer and exporter of copper, nickel and cobalt with comparatively lesser amounts of manganese.

The ESCAP Committee on Natural Resources, although held on an annual basis, mainly concentrates on one of the sectors of natural resources development, viz. energy, mineral and water resources sectors, at each of its sessions. The twelfth session of the Committee this year will be deliberating once again on mineral resources development after a period of three years.

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D. SPECIALIZED AGENCIES

I. World Bank (WB)

Structural Adjustment Loan (SAL)[24]

Structural adjustment lending was introduced by the World Bank in 1980 as a way to help some developing countries cope with a difficult economic environment by making policy and institutional changes made necessary by the rising cost of oil and falling terms of trade for some exports. Structural Adjustment Loans (SALs) have been formulated in conjunction with the stabilization programmes supported by the International Monetary Fund.

The basic objectives of SALs are to: support policy changes and institutional reform so as to improve the balance of payments in the medium and long term, to maintain growth in the face of severe constraints and to help regain growth momentum in the future; assist a country with the transitional costs of needed structural changes in industry, energy and agriculture by augmenting the supply of usable foreign exchange; and act as a catalyst for inflow of external capital to help balance of payments.

SALs focus on policy and institutional reform, cover macro-economic and sector issues and articulate precise policy modifications with a monitorable set of specific action to be undertaken within a specified time period. The Bank reaches a firm understanding with the Government taking out the loan on the monitorable action programmes, which are set out in a Letter of Development Policies included in the loan documentation and explicitly referenced in the Loan Agreement. SAL's funds are disbursed against imports, the release of funds being linked to the submission of appropriate documentation by the country.

SALs are usually "tranched" or divided in two time segments (usually after 6-9 months) so that progress can be reviewed at appropriate intervals.

Lending for structural adjustment in a given country can apply to the industrial sector, including mining activities such as are of concern to Special Commission 1.

Through April 1984 the Bank and its affiliate, the International Development Agency (IDA) have approved 27 structural adjustment loans and credits in 16 countries, for a total in excess of US$ 4 billion. The principal features of these loans have been: changes in trade régimes; mobilization of domestic and foreign resources; improved efficiency of domestic resource use; and institutional reforms.

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II. International Monetary Fund (IMF)[25]

The International Monetary Fund is not directly involved in measures for the improvement of the situation in the non-ferrous mineral industries in developing countries. The Fund facilities which have relevance to commodity developments in member countries are the compensatory financing facility and the buffer stock financing facility. However, assistance under these facilities, as for other forms of Fund assistance, is provided for general balance of payments purposes and is not earmarked for the financing requirements of a particular sector or sectors of the member's economy. Under the compensatory financing facility, assistance is provided to a member country that experiences balance of payments difficulties arising from a temporary shortfall in its total export earnings in order to support the international financial position of the country. The buffer stock financing facility provides assistance to members in balance of payments need for the financing of their compulsory contributions to buffer stocks accumulated in accordance with the provisions of international commodity agreements which the Fund's Executive Board decides meet the criteria for support under the Fund's buffer stock financing policy. With reference to non-ferrous metals, this facility has been used by Fund members in connection with their financial obligations under the Fourth, Fifth, and Sixth International Tin Agreements.

The Compensatory Financing Facility (CFF) of the IMF[26]

Main Features of Current CFF

The purpose of the compensatory financing facility is to provide financial assistance to members experiencing balance of payments difficulties resulting from export shortfalls or cereal import excesses that are temporary in nature and due largely to factors beyond the member's control. The facility is open to all Fund members, but it is used mainly by developing member countries. Coverage of the facility was expanded in 1979 to include earnings from services (workers' remittances and tourism) and in 1981 to include cereal imports, as well as merchandise exports, but the dominant use of the CFF has been in respect of shortfalls in merchandise exports.

With regard to shortfalls in merchandise exports (or in aggregate earnings from merchandise exports and services), the amount that a member may draw from the Fund is limited by the amount of the calculated shortfall, subject to a quota limit and the requirements of need and cooperation (see below). The quota limit constrains a member's maximum outstanding compensatory financing (CF) drawings at 83 percent of the member's quota in the Fund. The calculated shortfall is the amount by which export earnings in the shortfall year are below their medium-term trend value, defined as the five-year geometric average of export earnings centered on the shortfall year (i.e., normally the latest 12-month period for which actual export data are available). Exports for the two post-shortfall years are projected by the Fund staff in conjunction with the authorities of the member concerned.

Once a member chooses to base its request on earnings that include or exclude receipts from workers' remittances and tourism, it is bound by that choice in any subsequent request for a period of five years. In addition, a member may base its request on data that include cereal

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imports, in which case it is bound by that option for a period of three years. For a member that has decided to include cereal imports, the amount of the drawing, consisting of either an export or cereal component or both, is the net amount of the export shortfall and the cereal import excess (either of which could be positive or negative), subject to quota limits and the requirements of need and cooperation. The quota limits constrain the maximum outstanding drawings at 83 percent of quota in respect of each of the export shortfalls and the cereal import excesses, and total outstanding drawings at 105 percent of quota in respect of both components. The cereal import excess is calculated as the cost of these imports in commercial terms in the same 12-month period as the export shortfall year less their arithmetic average for the five years centered on that year. Cereal imports for the two post-excess years are projected by the Fund staff in conjunction with the authorities of the member concerned.

The early drawing procedure of the CFF allows a member to use estimated data in the shortfall year for up to six months in the case of exports, and for up to 12 months in the case of receipts from workers' remittances and tourism or cereal imports. This provision makes it possible for some members with long delays in compiling their trade statistics to use the facility, and also improves the timeliness of assistance by providing compensation earlier than would be the case if the calculations were based on actual data. If, however, subsequent calculations based on actual data for the shortfall (excess) year indicate that the member had been overcompensated, the member is expected to make a prompt repurchase of the amount of overcompensation.

The financing terms of the compensatory financing facility include a rate of charge plus a one-time service charge of 0.5 percent; from May 1, 1984, the rate of charge on drawings has been 7 percent per year. Repurchases are normally made in eight equal quarterly installments during the three-to-five-year period after the drawing, subject to earlier repurchase if the member's balance of payments and reserve position improve sufficiently.

Use of the CFF is subject to certain criteria: (1) there must be a balance of payments need; (2) the export shortfall or cereal import excess must be temporary and largely beyond the control of the member; and (3) the Fund must be satisfied that the member will cooperate with the Fund in efforts to find, where required, appropriate solutions for its balance of payments difficulties. In respect of requests that have the effect of raising outstanding CF drawings above 50 percent of quota (upper tranche), the Fund must be satisfied that the member has been cooperating with the Fund in efforts to find appropriate solutions for its balance of payments difficulties. The guidelines on cooperation associated with requests for drawings in the lower as well as in the upper tranches are contained in **the Annex of this report.**

The guidelines on cooperation have remained essentially unchanged throughout the years of the facility's operations. However, the distinction between the cooperation requirements associated with drawings in the lower and the upper CF tranches has become somewhat blurred with the emergence

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in recent years of balance of payments difficulties for many countries that are far more extensive than those that may be attributed to reversible shortfalls in their export earnings. The application of the test of cooperation depends on the circumstances of each case, in particular the policies pursued by the member concerned in relation to the nature of the balance of payments problem that it faces. If the balance of payments problem is solely the result of a reversible shortfall in the member's export earnings and if the member has been following appropriate policies, there is no need for policy changes, whether the member's request is in the lower or upper tranche of the CFF.

Evolution of the CFF

Since it was established in 1963, the CFF has been reviewed on a number of occasions as the Fund gained experience in its implementation and as the needs of members evolved. As a result of these reviews, several changes were made involving the following aspects: (i) access; (ii) method of estimating the medium-term trend of exports; (iii) coverage; (iv) reclassification of noncompensatory drawings as compensatory; (v) early drawings; and (vi) avoidance of double compensation. Most of these changes were introduced during three major reviews of the CFF in 1966, 1975, and 1979; the cereal decision was adopted in 1981.

With regard to access, when the CFF was established in 1963, the limit on outstanding drawings was 25 percent of a member's quota. In 1966 the limit was raised to 50 percent, with drawings of no more than 25 percent of quota in any 12-month period. At the same time, a two-tranche system was established regarding the requirement of cooperation, whereby a stricter test became associated with requests that would raise outstanding drawings above 25 percent of quota. In 1969, with the establishment of the buffer stock financing facility, a joint limit of 75 percent of quota was introduced on outstanding drawings under the CFF and the buffer stock financing facility (BSFF). The limit on outstanding drawings under the CFF was raised to 75 percent of quota in December 1975, with no more than 50 percent in any 12-month period; the threshold for the upper-tranche cooperation requirement was raised to 50 percent of quota, where it has remained ever since. The joint limit of 75 percent of quota for aggregate drawings under the CFF and the buffer stock financing facility was removed. In 1979, the limit on outstanding drawings was raised to 100 percent of quota and the limitation on drawings in any 12-month period was removed. When financing of cereal import excesses became possible in 1981, the 100 percent of quota limit on outstanding drawings was also applied to cereal drawings, with a joint limit of 125 percent of quota on outstanding export and cereal drawings. Finally, in 1984 on the occasion of major quota increases for members, the separate limits on outstanding drawings related to export shortfalls and to cereal import excesses were reduced to 83 percent of quota with a joint limit of 105 percent of quota.

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Total potential supply of CF resources, therefore, has expanded greatly since the mid-1960s. For example, for 120 developing countries, the potential supply of CF resources, calculated by multiplying their aggregate quotas by quota limits on outstanding CF drawings for exports shortfalls, increased from less than SDR 2 billion in the early 1960s to over SDR 20 billion at present; even with the reduction in quota limits in 1984, total potential supply of CF resources increased slightly as a result of increases in members' quotas.

The method of estimating the medium-term trend of exports has changed several times during the life of the facility. Attempts were made under the 1963 decision and under the 1975 review to establish formulas for projecting exports, neither of which worked satisfactorily. 27/ The judgmental forecast method has been used in the vast majority of cases, and the most recent attempt to establish a formula in 1975, although never used in practice, was formally abandoned in the 1979 review. Upper and lower limits were placed on export forecasts in the 1966 review, but were removed in the 1975 review. 28/ The arithmetic average of export earnings for the five years centered on the shortfall year was used as the estimate of the medium-term trend until the 1979 review, when it was decided to change to the geometric average. 29/

The option to include receipts from tourism and/or workers' remittances in export calculations was introduced in the 1979 review, and the option to include cereal import costs was introduced in 1981 for an initial period of four years. In the 1966 review, provision was made for the reclassification as CF drawings of previous noncompensatory drawings made no longer than six months earlier, provided that an export shortfall was found to exist on the basis of the latest available data. The time limit for previous noncompensatory drawings was extended from 6 to 18 months in the 1975 review, but no use has ever been made in practice of this reclassification procedure. The early drawing procedure (discussed above) was introduced in the 1975 review. Procedures were adopted in the 1966 review for avoiding double compensation arising from previous drawings (both compensatory and noncompensatory) from the Fund. In the 1979 review, the provision for reclassification of noncompensatory drawings as CF drawings was abolished, as well as the procedures for avoiding double compensation regarding previous noncompensatory drawings, but the procedures for avoiding double compensation in respect of previous CF drawings were maintained.

Experience with CFF

Total drawings under the CFF have expanded substantially since the establishment of the facility in 1963. This expansion has occurred primarily as a result of five general quota increases and three increases in the quota limits on CF drawings, although liberalizations of other aspects of the CFF have also contributed (e.g., expansion of commodity coverage, elimination of annual limits on drawings, and elimination of limits on projections). Annual drawings during 1976-83 averaged SDR 1.42 billion, which is slightly more than the aggregate amount of drawings of SDR 1.22 billion made during the entire 13 preceding years (1963-75). In particular, total drawings rose after the 1975 liberalization of the CFF.

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The level of annual CFF drawings has followed a cyclical path, reflecting the influence of world economic activity on exports. Thus, total annual drawings were particularly large after the 1975 recession (SDR 2.31 billion in 1976) and after the most recent recession in 1981-82 (SDR 2.63 billion in 1982 and SDR 2.84 billion in 1983). In response to the world economic recovery and the consequent increase in commodity prices since early 1983, only seven CF drawings amounting to SDR 758 million were made during the first nine months of 1984 (Table 1).

CF drawings accounted for 25 percent of the total credit extended by the Fund since January 1976. The predominant use of the CFF has been by the developing countries, which accounted for 81 percent of total CF drawings [30] (Table 2). Outstanding drawings as of end-May 1984, at SDR 6.57 billion, represented about one fifth of total outstanding Fund credit; 82 percent of the total outstanding CF drawings was accounted for by developing countries.

The 88 CF drawings of SDR 3.41 billion made under the 1976 decision were about 50 percent of the calculated shortfalls, while the 119 purchases of SDR 9.19 billion made under the 1979 decision were about 59 percent of the calculated shortfalls. The ratio of drawings to shortfalls increased from 49 percent in 1981 to 63 percent in 1982 and 76 percent in 1983 (Table 3). According to this measure, therefore, the capacity of the CFF to mitigate the adverse effects of export fluctuations is shown to have increased during a period of greatly increased instability in the commodity markets.

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Table 1. Drawings, Repurchases, and Outstanding Drawings Under the Compensatory Financing Facility a/ (January 1963-October 1984)

(In millions of SDRs)

	Drawings			Repurchases			Outstanding Drawings (End-of-period)		
	All Fund Members	Developed Countries b/	Developing Countries	All Fund Members	Developed Countries b/	Developing Countries	All Fund Members	Developed Countries 2/	Developing Countries
963 Decision									
1963	76	—	76	—	—	—	76	—	76
1964	—	—	—	—	—	—	76	—	76
1965	11	—	11	—	—	—	87	—	87
.966 Decision									
1966	24	—	24	16	—	16	96	—	96
1967	198	33	165	18	—	18	261	33	228
1968	69	4	65	78	29	49	251	8	243
1969	13	—	13	37	—	37	227	8	219
1970	3	—	3	97	8	89	132	—	132
1971	70	—	70	70	—	70	132	—	132
1972	299	—	299	51	—	51	380	—	380
1973	113	—	113	34	—	34	460	—	460
1974	107	—	107	32	—	32	535	—	535
1975	239	51	188	51	—	51	722	51	671
1975 Decision									
1976	2,308	787	1,521	317	—	317	2,713	837	1,876
1977	241	29	212	187	—	187	2,756	866	1,890
1978	578	171	407	387	86	301	2,921	952	1,969
1979 c/	279	139	140	353	31	322	2,847	1,059	1,788
1979 Decision									
1979 d/	293	—	293	290	189	101	2,850	870	1,980
1980	980	139	841	1,039	381	658	2,791	627	2,164
1981	1,243	—	1,243	762	229	533	3,272	399	2,873
1982	2,628	658	1,970	502	129	373	5,398	927	4,471
1983	2,839	267	2,572	708	148	560	7,529	1,046	6,483
1984 e/	758	—	758	703	—	703	7,584	1,014	6,570

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a/ Includes drawings under the cereal facility.

b/ According to current UNCTAD classification. Includes industrial countries as defined in the IFS, plus Botswana, Lesotho, South Africa, Swaziland, Greece, Malta, Portugal, Yugoslavia, and Israel.

c/ January-July 1979.

d/ August-December 1979.

e/ January-October 1984.

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Table 2. Aggregate CF Drawings in Relation to Other Uses of Fund Credit (January 1976-October 1984)

	Amount			Shares					
				By Types of Use			By Country Groups		
	Total	Developed Countries	Developing Countries	Total	Developed Countries	Developing Countries	Total	Developed Countries	Developing Countries
	(In billions of SDRs)			(In percent)					
otal use of Fund credit	48.28	9.78	38.50	100	100	100	100	20	80
CFF	12.15	2.24	9.91	25	23	26	100	18	82
Other facilities a/	36.14	7.54	28.59	75	77	74	100	21	79

a/ Includes credit tranches and extended Fund facility, oil facility, and buffer stock financing facility.

Table 3. Aggregate CF Drawings as Percent of Aggregate Shortfalls

	Number of Drawings (1)	Drawings (2)	Shortfalls (3)	Drawings as Percent of Shortfalls (2)/(3)x100
		(In billions of SDRs)		(In percent)
1975 Decision	88	3.41	6.86	50
1979 Decision Of which:	119	9.19	15.47	59
1981	29	1.18	2.41	49
1982	28	2.52	4.03	63
1983	24	2.84	3.75	76
1984 a/	7	.76	1.89	40

a/ January-October.

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Annex

Guidelines on co-operation for use of the CFF

Lower tranche

The criterion--namely, that the Fund is satisfied that the member will cooperate with the Fund in an effort to find, where required, appropriate solutions for its balance of payments difficulties--implies a willingness to receive Fund missions and to discuss, in good faith, the appropriateness of the member's policies and whether changes in the member's policies are necessary to deal with its balance of payments difficulties. Where the Fund considers that the existing policies of the member in dealing with its balance of payments difficulties are seriously deficient or where the country's record of cooperation in the recent past has been unsatisfactory, the Fund will expect the member to take action that gives, prior to submission of the request for the purchase, a reasonable assurance that policies corrective of the member's balance of payments problem will be adopted.

Upper tranche

The additional criterion of the upper tranche--namely, that the Fund is satisfied that a member has been cooperating with the Fund in an effort to find, where required, appropriate solutions for its balance of payments difficulties--means that in the light of the action taken by the member and the balance of payments policies being pursued the Fund is satisfied with the member's record of cooperation. The existence of a satisfactory balance of payments position (apart from the effects of the shortfall) or the existence of and broadly satisfactory performance under an arrangement with the Fund, or the adoption of such an arrangement at the time the request for a CFF purchase is made, will be considered to provide evidence of cooperation. However, the existence or the adoption of an arrangement is not a prerequisite. If a member's current and prospective policies were such as would, in the Fund's view, meet the criteria of the use of resources in the credit tranches, the member would be deemed to have been satisfactorily cooperating with the Fund, even though such use was not contemplated at the time of the CFF request.

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The Buffer Stock Financing Facility (BSFF)[26]

The BSFF, established in June 1969 is to some extent a logical development from the compensatory financing facility. The BSFF intervenes one link further back in the causal chain of export instability by making finance available for the support of arrangements designed to moderate export price fluctuations, thereby reducing the variability of export receipts. Under this facility the members of any international commodity agreement (ICA) which are also members of the Fund may obtain Fund financial assistance in connection with their compulsory contributions to that agreement for financing stabilization operations under an international stocking scheme. These contributions may take the form of payments in kind or in cash to an international buffer stock or of the witholding of national stocks under international control.

The use of the facility is subject to a double set of conditions. On the one hand the features of the ICA concerned must be consistent with a number of principles laid down by the Fund, the most important of them being that the ICA be designed to stabilize commodity prices around the medium-term trend so that stock accumulation and decumulation be roughly balanced over the life of the agreement. On the other hand, the ICA's members wishing to make use of the facility must have a balance of payments need and must cooperate with the Fund in efforts to find, where required, solutions to their payments difficulties. For any given country, the outstanding drawings under the buffer stock financing facility cannot exceed 45 percent of quota, but within this overall limit, the Executive Board may authorize the financing of up to 100 percent of the compulsory contributions to an international buffer stock.

For the last decade all ICAs with buffer stock provisions have been declared eligible for Fund support under the Fund's facility, with the sole exception of the 1975 and 1980 International Cocoa Agreements, which were financed with the proceeds of a trade levy. Total drawings in support of eligible ICAs during that period have amounted to SDR 454 million.

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III. United Nations Educational, Scientific and Cultural Organization (UNESCO) and its Intergovernmental Oceanographic Commission (IOC)

Ocean Science in Relation to Non-Living Resources (OSNLR) 31/

The IOC of the UNESCO along with the Ocean Economics and Technology Branch (OETB) of the Department of International Economic and Social Affairs (DIESA) of the United Nations Secretariat are co-sponsors of a scientific programme entitled "Ocean Science in Relation to Non-Living Resources (OSNLR)". In order to, inter alia, plan the further development of the OSNLR Programme, a Guiding Group of Experts on the Implementation of OSNLR Programme was established; the first session of the Guiding Group was held in January 1985.

In order to identify areas where scientific research might be undertaken in support of non-living resources, the Group: (i) identified the types of deposits and materials that are now being exploited in the offshore or might be exploited at some time in the future; (ii) attempted to provide some indication of the existing relationship between worldwide development potential of these materials and the level of scientific attention given to them; (iii) considered the significance of the results in terms of discrepancies between the economic importance of the various deposits and the level of scientific attention given to them and; (iv) discussed efforts that could correct the imbalances, including the type of scientific work required, related IOC projects relevant to regional capabilities and equipment and, finally, implications from the standpoint of training.

The Guiding Group compiled a "shopping list" of commercially interesting materials. Although it recognized that some materials, such as glauconite, are, on occasion, mentioned as having some economic potential, they were judged to be too speculative for consideration in the context of the Group's overview. The Guiding Group, therefore, did not wish to imply that the list is exhaustive.

Other types of deposits, including consolidated, hard rock or lode deposits (such as coal), were felt to be more relevant to onland resources in that they are exploited by underground extensions from land and did not need to be addressed in the context of marine science. Similarly, offshore deposits or sulphur and evaporites should, perhaps, be considered in the context of oil and gas in view of their structural and genetic relationship and the similarity of exploration/development techniques.

Because it was difficult to categorize some deposits such as phosphorites or manganese crusts into "seabed" or "shelf" deposits, the Guiding Group decided to compile a general annotated list that could, subsequently, group the materials into appropriate categories to correspond to scientific programmes and other efforts that might be undertaken.

Table 1 presents a summary of global beach and offshore mining activities.

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Table 1. Summary of global beach and offshore mining activities

Commodity	Country	Current Status
cassiterite (tin)	Indonesia; Thailand; U.S.S.R.,	offshore mining
	United Kingdom;	offshore pilot-scale mining
	New Zealand;	offshore exploration
	Australia	previous beach and offshore exploration
chromite (chromium)	U.S.A.;	previous beach mining and offshore exploration
	Mozambique	previous offshore exploration
diamonds	Namibia	beach and offshore mining
gold	Canada, New Zealand;	previous beach mining/offshore exploration
	Philippines;	previous offshore mining; present status unknown
	U.S.A.;	previous beach mining, offshore exploration and mining
	U.S.S.R.,	Offshore exploration/mining?
	Fiji;	estuarine mining operation
	India	offshore exploration
iron sands	Brazil;	beach mining
	Fiji; South Africa;	beach mining
	Japan;	previous beach and offshore mining
	Australia; New Zealand; Florida, U.S.A.;	previous beach mining
	Philippines;	previous beach mining, present status unknown
	Mozambique; S.W. India;	previous or ongoing offshore exploration
	Sri Lanka	beach mining, offshore exploration
monazite (rare earths and thorium)	Australia;	previous beach mining
	S.W. India;	offshore exploration
	Brazil; Sri Lanka;	beach mining
platinum	U.S.A.	previous beach mining, and ongoing exploration
rutile	Australia; Brazil; S.W. India; Sri Lanka.	beach mining, offshore exploration
	Canada	previous offshore exploration
zircon	Sri Lanka;	beach mining, offshore exploration
	Canada;	previous exploration
	Australia;	previous offshore exploration
	Mozambique	

Adapted from HALE, P.B. and Mc LAREN, P. (1984) "A Preliminary Assessment of Unconsolidated Mineral Resources in the Canadian Offshore", Bulletin of the Canadian Institute for Mining and Metallurgy, October 1984.

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As a second step, the Group attempted to identify possible anomalies between economic significance and scientific effort for non-living resources on an average, global basis as opposed to a regional or national basis. Regional analysis is better left to individual groups whose regional information base far exceeds that available to the Guiding Group.

The analysis was done by means of a relative ranking that takes into account the Group's present appreciation of selected "measures". While regional information was discussed, the aggregate evaluation is more relevant to formulating global recommendations that could serve as guidelines for the broader IOC community. The consensus of the Group is presented in Table 2.

Table 2 indicates that commodities can be considered to fall into three groups:

(i) those which are of no great economic or scientific interest on a global basis (silica sands, carbonate and siliceous oozes). The Guiding Group does not see this category of materials as warranting any global priority by IOC although it recognizes that these commodities may be important in some areas;

(ii) those which are of no immediate economic interest but are of considerable scientific interest: polymetallic sulphides, metalliferous muds, and polymetallic nodules and crusts. These merit consideration by IOC and UN(OETB) in the context of scientific research in support of longer term assessment and development;

(iii) those which are of economic interest but with a scientific interest ranging from high as in the case of oil and gas; intermediate as, for example, in the case of carbonate sediments, the coastal zone and phosphorites; to low scientific interest as in the case of placers, sand and gravel. The Group concluded that this third category, whilst of variable scientific interest, merits the highest consideration by IOC and UN(OETB) for the world as a whole because of its more immediate economic potential.

Table 2 : Comparison of Economic Significance and Scientific Effort

	ECONOMIC SIGNIFICANCE		SCIENTIFIC EFFORT	
	Availability	Economic Potential	Contemporary Interest	Level of Effort
Sand and gravel	A	A	C	C
Carbonate materials	A	B	C	C
Placer minerals	A	A	C	C
Phosphorites	B	B	B	B
Silica sands	C	B	C	C
Siliceous oozes	A	C	C	C
Calcareous oozes	A	C	C	C
Polymetallic nodules	B	B	A	A
Metalliferous sediments	B	B	B	C
Manganese crusts	C	C	B	B
Polymetallic sulphides	B	B	A	A
Oil and gas	A	A	A	A
Coastal zone	A	A	B	A

Explanation of Table 2

"Availability" is intended to indicate how widespread, throughout the world ocean, deposits of the material are known or likely to be:

(A) abundant - in most or many of the regions
(B) common - in several regions
(C) limited - in only a few regions

"Economic potential" is intended to indicate the likelihood that some proportion of these deposits are now being exploited, or could be exploited in response to market forces at some time in the foreseeable future, say within 20 years:

(A) high - a significant number of deposits are being exploited and/or are likely to be exploited in the foreseeable future;
(B) medium - a few deposits are being exploited and/or may be exploited in the medium term or longer term
(C) low - it is unlikely that deposits will be exploited for quite some time

"Contemporary interest" is intended to indicate the rate of increase of scientific interest in the deposits and the number of researchers that are being attracted to closely related subjects:

(A) high - substantial increase in interest and scientists
(B) moderate - modest increase in interest and scientists
(C) low - little or no increase in interest and scientists

"Level of effort" is intended to indicate the relative amount of scientific effort that is presently being directed towards closely related subjects:

(A) high - a high level of effort
(B) moderate - a substantial level of effort
(C) low - a modest level of effort

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Scientific research as well as the exploration and exploitation of deep sea mineral deposits require large vessels, sophisticated equipment and trained scientific and technical manpower. Deep sea programmes on non-living resources will therefore require substantial funding, and advanced technology and know-how which, at present, are found in only a few countries.

It is expected that there will be an increase in interest in the scientific study and exploration of the deep seabed. The Guiding Group believed it is desirable that scientists from many countries have the opportunity to participate and contribute to research on the deep seabed and its resources. This will require greater co-operation between the scientists of many countries. The Guiding Group concluded that IOC and UN(OETB) should foster and encourage broader national involvement in deep seabed research and exploration and support appropriate training programmes by regional bodies and countries. In this context, it may be desirable for the IOC to be associated with the IGCP[32] Group on Manganese Deposits. The Guiding Group also estimated it would be useful that in the framework of OSNLR, IOC and UN(OETB) encourage environmental and paleoenvironmental studies associated with the DSDP/ODP[33] programme. This programme appears to the Group as one of the most relevant to develop knowledge on the mineral resources of the deep sea floor. The Guiding Group considered it would be likewise very useful to encourage participation of scientists of developing countries in this project.

The Guiding Group emphazised the relevance and the need for scientific research in support of non-living resource development and expressed a number of general recommendations that reflect the global need for an increased effort and broad scientific involvement on the subject.

Recommendation 1

At the present time the Guiding Group suggested that priority, on a global basis, be given to non-living resources of coastal zones through SETMY[34] and that countries and regions examine their economic potential, their needs and their expertise for involvement in this programme.

Recommendation 2

Training, particularly as it relates to coastal zones, placers, sand and gravel and carbonates, is given a high priority and should be a focus of effort by TEMA.[35] Some training on phosphate deposits is also recommended.

Recommendation 3

The Guiding Group believes that IOC and UN(OETB) should be encouraged to play a significant role in assisting the regional subsidiary bodies of the Commission, and other appropriate regional bodies, in carrying out scientific investigations which will provide a basis for planning resource assessment, data collection and management, training and co-ordination.

Recommendation 4

Investigation of non-living resources of the deep sea floor comprises scientific challenges of high level. At present this research involves scientists from a few countries and there is clearly a need to actively work to expand opportunities for participation and training in deep sea research, particularly by scientists from developing countries.

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IV. International Labour Office (ILO)[36]

The ILO stated that the only materials which are of possible relevance to the work of Special Commission 1 are those prepared for the recent Tripartite Meetings for Mines other than Coal Mines. These reports deal mainly with issues of concern to employers and workers directly involved in mining activities (e.g. safety and health, wage-fixing, employment, vocational training and industrial relations).[37]

Aside from the holding of meetings of this type the ILO has no programme of relevance to the non-ferrous mineral industry. The Employment and Development Department is, indeed, concerned with questions of industrial restructuring but has approached these issues from the viewpoint of enterprise and labour market behaviour and not from that of any particular sector of production.

V. Food and Agriculture Organization (FAO)[38]

The FAO informed that it has no direct involvement in the extraction or processing of non-ferrous minerals from the sea. However, since processing ashore could lead to an increase in pollution of the seas, the FAO would have an interest in this matter and in this connexion, attention can be drawn to a report of the IMCO/FAO/UNESCO/WMO/WHO/IAEA/UN Joint Group of Experts on the Scientific Aspects of Marine Pollution (GESAMP) dealing with the scientific aspects of pollution arising from the exploration and exploitation of the sea-bed.[39]

With regard to exploitation, most of the mining operations would likely take place in deeper waters than normally worked by vessels engaged in fishing on or close to the sea bottom. Nevertheless, such operations could be carried out in areas fished by, for example, tuna fishing vessels and used by the maritime fleets of the world which could lead to changes in existing conventions, or the adoption of new ones under which the FAO would cooperate with the International Maritime Organization (IMO).

Exploitation on the continental shelf could have serious effects on the conduct of the fishery in that area and to the detriment, due to siltation, of the living resources of the sea and of the coastal areas, including coral reef and mangrove forest.

The FAO will continue to monitor developments related to the extraction of minerals from the sea.

VI. International Atomic Energy Agency (IAEA)[40]

The IAEA informed that whatever activities it has in extracting mineral resources do not fall in the category in which Special Commission 1 is interested, and do not involve the exploitation of sea-bed.

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E. REGIONAL DEVELOPMENT BANKS

I. Asian Development Bank (AsDB) 41/

The AsDB informed that to date, it has not been involved in the development of the land-based deposits of copper, nickel, cobalt and manganese in any of its developing member countries. As such it is not in a position at present to comment on the impact of future exploitation of the polymetallic nodules containing these metals from the deep sea-bed area on the developing land-based producer States.

II. Inter-American Development Bank (IDB)

IDB's Assistance to the Development of the Mineral Resources of Member Countries 42/

Background Information on the Inter-American Development Bank

The Inter American Development Bank (IDB) is an international financial institution established in 1959 to help accelerate economic and social development in Latin America. Its headquarters are located in Washington D.C. and it has subsidiary offices in each of its member countries in Latin America and the Caribbean. The Bank also maintains European offices in Paris and London. At the present time forty-three Governments are members of the IDB, consisting of twenty-seven from the Western Hemisphere, fourteen from Europe, and Israel and Japan.

The member countries of the Western Hemisphere are known as the regional members and the others as the non-regional members. These latter became members of the Bank in 1976 - and together hold 6.74% of the capital and voting power of the institution. The United States holds 34.83%, Canada 4.48% and the remaining 53.93% is divided among the regional developing countries in proportion to their population, size and economic strength. While the Bank seeks to mobilize resources from within and without the region, the Charter provides that such resources must be utilized exclusively for the purpose of accelerating "the process of economic and social development of the regional developing member countries, individually and collectively." The charter further provides that to implement its purpose, the Bank shall have the following functions:

(i) to promote the investment of public and private capital for development purposes;

(ii) to utilize its own capital, funds raised by it in financial markets, and other available resources, for financing the development of the member countries, giving priority to those loans and guarantees that will contribute most effectively to their economic growth:

(iii) to encourage private investment in projects, enterprises, and activities contributing to economic development and to supplement private investment when private capital is not available on reasonable terms and conditions;

(iv) to cooperate with the member countries to orient their development policies toward a better utilization of their resources, in a manner consistent with the objectives of making their economies more complementary and of fostering the orderly growth of their foreign trade; and

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(v) to provide technical assistance for the preparation, financing, and implementation of development plans and projects, including the study of priorities and the formulation of specific project proposals.

In carrying out these functions the Bank is required to cooperate as far as possible with National and International Institutions and with private sources supplying investment capital.

The resources at the disposal of the Bank consist of the following:

(a) The Capital subscription of the member countries.

(b) Contributions made by member Governments to a fund known as the Fund for Special Operations which is used for making loans at concessional rates of interest and periods of repayment.

(c) Borrowings from the International Capital Market.

(d) Recoveries from outstanding loans.

(e) Accumulated profits.

(f) Trust funds administered by the Bank for certain countries that have made such arrangements with the Bank.

Since its creation in 1959 the IDB has loaned US$28 billion for 1,562 projects with an estimated total worth of over US$100 billion. In selecting the projects to be financed year by year the Bank works in close collaboration with its member Governments so as to be responsive to the development plans and perceived needs of each country. In addition, through its technical assistance programs the Bank assists member Governments in the preparation of bankable projects and in strengthening the institutions charged with the responsibility of implementing them. By virtue of the high standing enjoyed by the Bank in the International Capital Markets it has been able to obtain resources for lending to member countries on substantially better terms than these countries would have been able to obtain for themselves individually. These benefits have been passed on to the borrowers. In addition, the Fund for Special Operations, consisting of 'no cost' Contributions by member Governments, has enabled the Bank to make highly concessional loans for certain projects to its less developed member countries, most of which would never have been started if this type of funding were not available.

The role of the Bank in respect of the development of the mining sector in its member countries

The IDB's annual report on the economic and social progress of Latin America for the year 1983 focused on an examination of the natural resources of the region.

With respect to minerals the report examined potential resources, proven reserves and actual current production.

There is no doubt that the region plays an important role in the world production of a number of important non combustible minerals. Currently the region generates 5% of the world production of nickel, 15% of iron, lead, zinc

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and tin, between 20% to 25% of bauxite and copper and nearly 30% in respect of silver. This production is very unevenly distributed and is for the most part concentrated in relatively few countries.

The report also points out however that current production and known resources are not necessarily indicative of the actual resources of the region. "Knowledge of the Latin American resource base is still quite limited. Only relatively small areas, mostly in the traditional mining countries, have been adequately explored. However, existing data and geological projections indicate that, in addition to known deposits, the region contains very large amounts of undiscovered resources. In particular, extensive new deposits of iron ore, manganese, bauxite, copper, lead, zinc, tin, nickel and silver, as well as of oil, gas, coal, and uranium are expected to be available in the future for commercial exploitation."

The policy of the Bank

Against this background the Bank's mining policy is directed to the support of projects and programs aimed at identification and economic exploitation of mineral resources in the developing regional member countries, as well as extension of support to institutions in the sector, in consonance, where appropriate, with the respective economic development plans.

The Bank is prepared to consider requests for project financing and/or technical cooperation financing for the mining sector which will contribute to:

- Identifying and evaluating mineral resources.
- The development of mineral resources and their exploitation and concentration.
- Providing the necessary infrastructure for development of mining projects.
- Increasing the value added to mineral products and making their exploitation more efficient.
- Facilitating the development of remote or depressed areas and of industries producing inputs for mining and processing mineral products.
- Stimulating the development, transfer and absorption of technology, including use of lateral technical cooperation.
- Creating incentives to intra-regional cooperation in mineral resource development and fostering economic integration through multinational mining projects.
- Mobilizing financial resources for the identification and development of mining projects.

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- Strengthening the institutional capacity of the mining sector.

Projects financed by the IDB

During the past 25 years the Bank has made loans to the Mineral Sector for a total of US$850 million. This figure represents 3% of the total lending of the Bank during this period. The major portion of these loans have been distributed among six countries namely, Argentina, Bolivia, Brazil, Chile, México and Perú. The main minerals involved were: copper, coal, iron, lead, zinc, silver and tin. The following table summarizes the nature and distribution of the Bank's operations in this area.

Latin America: Summary of Loans by IDB in the Mining Sector

(in millions of US$)

Year	Borrower and Subject Matter	Amounts
	1. Loans for exploration and feasibility studies	
1964	Argentina - (MISIPA) Feasibility study - iron ore	0.1
1974	Brasil - Regional Exploration	4.3
1977	Colombia - Feasibility Study - phosphate	1.7
1980	Guyana - Feasibility Study - kaolin	0.1
1984	Honduras - Obtaining Information on Mining Areas (Technical Cooperation)	1.2
	Subtotal	$7.4
	2. Loans for extraction	
1961	Bolivia - (COMIBOL) Rehabilitation of mines - tin	4.5
1963	Bolivia - (COMIBLO) Rehabilitation of mines - tin	4.9
1964	Brasil - (CVRD) Enlargement of mines - iron and steel	30.0
1966	Bolivia - (COMIBOL) Rehabilitation of mines - tin	2.5
1968	Brasil - (CVRD) Enlargement of mines - iron ore	11.5
1972	Argentina - (HIPASAN) Development of mines - iron ore	32.0
1976	Perú - (CENTROMIN) Enlargement of mines - copper	33.4
1977	Brasil - (CARAIBA METAIS) Extraction and production - copper	63.2
1978	México - (NAFINSA-MICARE) Mining - coal	140.0
1979	Perú - (CENTROMIN) Enlargement of mines - copper	33.0
1980	Brasil - (CRM) Mining - coal	75.0
1981	Perú - (CENTROMIN) Enlargement of mines - lead, zinc, silver	33.0
1983	Chile - (CODELCO) Mining Proyects - copper	268.0
	Subtotal	$731.0

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Borrower and Subject Matter

3. Global loans for small and medium sized mining operations

1961	Bolivia - CBF	1.6 [a/]
1961	Argentina - Provincial Banks	0.3 [a/]
1961	Chile - CORFO	1.0 [a/]
1964	Chile - CORFO	0.8 [a/]
1966	Bolivia - CBF	5.0 [a/]
1968	Chile - CORFO	1.8 [a/]
1973	Perú - Banco Minero	6.0
1976	Regional - CABEI	2.3 [a/]
1978	Perú - Banco Minero	6.0
1980	Perú - COFIDE	2.5 [a/]
1980	Perú - Banco Minero	20.0
1982	Chile - CORFO	18.0 [a/]
1983	Perú - Banco Minero	20.0
1984	Bolivia - Small and medium mining operations	25.0
	Subtotal:	111.3
	Total:	849.7

[a/] Mining component of a Multi-Sectoral credit.

Conclusion

It will be seen from the foregoing that the IDB's participation in mining projects in its member countries while substantial has, up to now, constituted a relatively small percentage of total lending. The IDB does not anticipate any change in this pattern in the immediate future given the fact that private commercial capital, whether by way of investments or by way of loans, is more readily available for mining project than is the case with other areas such as agriculture and urban development.

The Bank will in all probability continue its current strategy of selective assistance to countries with a traditional mining sector, extending credits for projects that improve the efficiency and productivity of mining operations so as to reduce costs of production and improve competitiveness in world markets. In the case of those countries that lack a traditional mining sector but which show indications of the existence of mineral deposits the Bank will encourage studies and evaluations designed to identify areas of major potential.

With respect to the question of the likely impact on land based producers of the exploitation of competing resources from the sea bed, the Bank sees this as an example of the general problem experienced by any economy with a narrow or highly specific production base, when faced with the possibility of an increase in the world supply of the commodity in excess of the increase of world demand. The Bank has always encouraged and will continue to encourage, its member countries to diversify their production base while striving to increase productivity and efficiency in all existing areas. In the case of mineral or other raw material producers a further line of defence is provided by developing the local processing of such materials to the fullest extent possible. While there are obvious limitations to this strategy, particularly in small countries, the effort has to continue to be made. The Bank is, and will continue to be, one of the mechanisms that member countries can make use of to mobilize the necessary financial and technological resources in pursuit of this endeavour.

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(ORIGINAL: FRENCH)

F. INTER-GOVERNMENTAL ORGANIZATIONS

I. Commission of the European Communities (EEC)

System for Minerals (SYSMIN)[43]

Established by the second ACP-EEC Convention (Lomé II), SYSMIN - special financing facility for mining countries - was renewed in the third Convention signed at Lomé on 8 December 1984 (Lomé III). It is dealt with in title II, chapter III of this Convention (articles 176-184). Not a mechanism for compensating earnings losses, it is an instrument for development at the service of mining countries facing serious difficulties.

Characteristics and recent modifications

The purpose of SYSMIN is to help ACP States heavily dependent on their mining sectors to cope with exceptionally adverse circumstances seriously affecting these sectors (article 176). As stipulated in article 180, the degree of dependence is expressed in terms of either one product (15 per cent) or several products (20 per cent).

The main variable taken into account in the analysis is the viability of the production capacity. The main form of action by SYSMIN is therefore to contribute to the efforts made by the ACP countries concerned to restore this viability (even with reduced capacity, if necessary abandoning marginal activities) when that viability has been impaired (as described in articles 176 and 179). The system provides not for an automatic transfer but for a contribution to a joint effort (host State, funding bodies). As specified in article 182, this effort will take the form of a programme of rehabilitation, maintenance and rationalization, if the viability of the sector has been impaired only temporarily (by chance circumstances independent of the will of the country concerned). If, on the other hand, restoring viability is impossible, SYSMIN action will not seek to maintain uneconomic capacity at any cost. It may, on the contrary, while remaining a contribution to investment, involve a project (even outside the mining sector concerned) whose contribution to the development of the country, in particular as a source of export revenue, has been demonstrated.

SYSMIN is not, therefore, an automatic system of compensating lost export earnings. Without ignoring such earnings (article 179), it concentrates on safeguarding their source, that is to say production/export capacity.

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As under Lomé II, SYSMIN does not cover management errors, but it can take account of cases in which the viability of a mining operation is undermined without warning as a result of the emergence of major technical or economic innovations affecting the profitability of the type of production concerned.

The need for the satisfactory integration of the mining sector into the development process means that account must be taken of cases where countries (cf. articles 180 (b) and 182), in making the necessary effort themselves to safeguard the viability of their mining sectors, find it impossible to ensure continuity in the implementation of other priority development projects (article 179 (b)). SYSMIN may intervene in order to avoid forced and costly interruptions of such projects.

Implementation

It can be seen that developing countries with mineral wealth have not always been able to turn this potential into a motor for development; SYSMIN takes account of the particular difficulties of these countries, its purpose being to support their efforts aimed at a more rigorous and effective management of the mining sector, not only in its own right (hence the emphasis placed on the viability of these operations) but also in terms of its orderly integration into the overall development process. These efforts are all the more necessary in that the markets for mining products have not yet emerged from the stagnation which has been affecting them for several years, a situation which requires an increased effort on the part of the producer countries to become more competitive at a time when their economies, highly dependent (sometimes excessively so) on these international markets, are seriously hit.

Operations

(a) The first two SYSMIN operations concerned Zaire (40 million ECU) and Zambia (55 million), whose copper and cobalt production capacity, affected by serious events in the recent past, was in danger of collapsing in 1980-1981.

(b) Subsequently, as a result in particular of the very bad slump on most ore markets in 1982, several countries were unable, despite the relative recovery on these markets in 1983 and 1984, to find sufficient resources to absorb the shock of 1982. Several SYSMIN requests were received, three of which were declared eligible: Guyana for white bauxite, Rwanda for tin and Zambia again for copper/cobalt. In these three cases steps are currently being taken to draw up a rehabilitation project in co-operation with the other funding bodies (EIB, IBRD, IFC, etc.).

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(c) Finally, the possible eligibility of five other cases was being investigated at the end of Lomé II - for iron ore, copper/cobalt and bauxite/alumina.

Conclusion

In practice, SYSMIN operations, after in-depth discussions between the Community and the ACP States concerned, have allowed a joint analysis of the particular difficulties encountered. In order to reach a point of common agreement enabling financial action to take place, this necessary analysis has covered not only the causes leading to the need to turn to SYSMIN but also the best way of restoring the viability of the mining sectors affected. Experience under Lomé II nevertheless showed that improvements were possible: first of all, some countries with large mining sectors could not benefit from SYSMIN either because their products were not included in the list of products covered or because they did not reach the minimum threshold of dependence for any single product, even although they clearly exceeded that threshold for their mining output as a whole. It also became clear that there was a need for greater rigour, not only in the management of mining enterprises but also in the utilization of the mining sector as a factor of development. Lomé III should bring significant improvements in these two respects, while emphasizing the interest of the mining sector for both the ACP States and the Community.

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Annex
Articles in the Third ACP-EEC Convention relating to mining products: special financing facility (SYSMIN)44/

Chapter 3

Mining products: special financing facility (SYSMIN)

ARTICLE 176

With a view to contributing to the creation of a more solid basis for the development of the ACP States whose economies are dependent on the mining sectors and in particular towards helping them cope with a decline in their capacity to export mining products to the Community and the corresponding decline in their export earnings, a system shall be established to assist these States in their efforts to re-establish the viability of the mining sector or to remedy the harmful effects on their development of serious temporary or unforeseeable disruptions affecting those mining sectors and beyond the control of the ACP States concerned.

ARTICLE 177

1. The system laid down in Article 176 shall apply notably to the following products:

- copper, including associated production of cobalt,
- phosphates,
- manganese,
- bauxite and alumina,
- tin
- iron ore (ores, concentrates and roasted iron pyrites), whether or not in agglomerate form (including pellets).

2. If, not sooner than twelve months following the entry into force of this Convention, one or more products not contained in the above list, but upon which the economies of one or more ACP States depend to a considerable extent, are affected by serious disruptions, the Council of Ministers shall decide, not later than six months after the presentation of a request by the ACP State or States concerned, whether or not to include the said product or products in the list.

ARTICLE 178

1. For the purposes specified in Article 176 and for the duration of this Convention, a special financing facility shall be set up to which the Community shall allocate an overall amount of 415 million ECU to cover all its commitments under this system:

(a) this amount shall be managed by the Commission;

(b) this overall amount shall be divided into a number of equal annual instalments corresponding to the number of years of application. Each year, except the last, the Council of Ministers, on the basis of a report submitted to it by the Commission, may authorise the advance use of up to 50% of the following year's instalment where required;

(c) whatever balance remains at the end of each year of application of this Convention, except the last, shall be carried over automatically to the following year;

(d) if the resources available for any year of application are insufficient, the amounts due shall be reduced accordingly;

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(d) the resources available for each year of application shall be made up of the following elements:

- the annual instalment, minus any amounts used under (b),

- the sums carried over under (c).

2. Before the expiry of the period referred to in Article 291, the Council of Ministers shall decide on the allocation of any balances remaining from the overall amount referred to in this Article.

ARTICLE 179

1. Recourse to the means of financing available under the special facility provided for in Article 178 shall be open to:

(a) the countries eligible under Article 180(a) for a product covered by Article 177 and exported to the Community,

(b) the countries not eligible under Article 180(a) but eligible under Article 180(b), by derogation on a case-by-case basis from Articles 177 and 180(a),

when a substantial fall is recorded, or can be expected over the following months, in their capacity to produce or to export, or in their export earnings derived from mining products referred to in Articles 177 and 180(b), of such a magnitude as to affect seriously the profitability of otherwise viable and economic lines of production, thus preventing them from replacing at a normal rate or maintaining the production plant or export capacity, and from continuing to provide funds for major identified development projects to which the ACP State concerned has given the highest priority in the allocation of mining revenue.

2. The recourse referred to in paragraph 1 shall also be available when a substantial fall in production or export capacity is experienced, or is foreseen, owing to accidents and serious technical mishaps or grave political events, whether internal or external, or important technological and economic developments affecting the profitability of production.

3. A substantial fall in production or export capacity shall be taken to mean 10%.

ARTICLE 180

An ACP State which, during at least two of the preceding four years, as a general rule, has derived either

(a) 15% or more of its export earnings from a product covered by Article 177, or

(b) by derogation on a case-by-case basis from Article 177 and from (a) above, 20% or more of its export earnings from all its mining products (excluding precious minerals, oil and gas)

may apply for financial aid from the resources allocated to the special financing facility if the conditions laid down in Article 179 are fulfilled.

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However, for the least-developed, landlocked and island ACP States, the figure stipulated in (a) shall be 10% and the figure stipulated in (b) shall be 12%.

ARTICLE 181

The application for aid shall be made to the Commission, which shall examine it in conjunction with the ACP State concerned. Where necessary, an expeditious experts' study to diagnose the production capacity concerned from the technical and financial angles may be financed from the funds provided under Article 178, notably with a view to expediting appraisal of the application.

The fact that the aid conditions have been fulfilled shall be established by agreement between the Community and the ACP State. Notification thereof by the Commission to the ACP State shall entitle the latter to Community aid from the special financing facility.

ARTICLE 182

The aid referred to in Article 180 shall be directed at the objectives set out in Article 176.

As a matter of priority such aid shall be used to finance rehabilitation, maintenance and rationalization programmes to complement the efforts made by the ACP State concerned to restore the affected production and export capacity to a viable level, with special attention being paid to integrating it satisfactorily in the country's overall development process. Where it would appear impossible to restore such capacity to a viable state, the ACP State concerned and the Commission shall seek projects or programmes best suited to attaining the objectives of the system.

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Where Articles 179(1)(b) and 180(b) are applied, the resources of the special financing facility shall be used as a matter of priority to support the efforts the ACP State concerned deploys to avoid interruption of the development projects referred to in Article 179 or to promote projects that would replace, even partially, the mining capacities lost as a source of export earnings.

The amount of this aid shall be determined by the Commission in the light of the funds available under the special financing facility, the nature of the projects or programmes proposed by the ACP State concerned and the possibilitie for co-financing.

In determining the amount, account shall be taken of the scale of the reduction in production or export capacity, and of the losses of earnings suffered by the ACP States as identified in Article 179 and of the relative importance of the mining industry affected for the ACP State's export earnings.

Under no circumstances may a single ACP State be eligible for more than 35% of the funds available under an annual instalment. This percentage shall be 15% for a contribution on the basis of Articles 179(1)(b) and 180(b).

The procedures applicable to assistance in the above circumstances and the implementing arrangements shall be as provided for under Title III, Part Three, of this Convention; account shall be taken here of the need for rapid implementation of the aid.

ARTICLE 183

1. To permit the implementation of precautionary measures to halt deterioration of production plant during the appraisal or implementation of these projects or programmes, the Community may grant an advance to any ACP State which requests one. This possibility shall not exclude recourse by the ACP State concerned to the emergency aid provided for in Article 203.

2. Since an advance is granted as a means of prefinancing projects or programmes which it precedes or to which it is preparatory, account shall be taken of the scale and nature of those projects or programmes when the amount of the advance is fixed.

3. The advance shall take the form of supplies or of the provision of services, or of cash payments if this arrangement is considered more appropriate.

4. It shall be incorporated in the amount earmarked for Community operations in the form of projects or programmes when the financing agreement relating to such operations is signed.

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ARTICLE 184

Aid granted from the special financing facility shall be reimbursed on the same terms and conditions as special loans, account being taken of the provisions adopted in favour of the least-developed ACP States.

II. General Agreement on Tarriffs and Trade (GATT) 45/

Multilateral Trade Negotiations (MTN)

The efforts of the General Agreement on Tariffs and Trade (GATT) with regard to assistance to developing countries are reflected in the Multilateral Trade Negotiations (MTN), the Tokyo Round of which concluded in 1979.

A major objective of the developing countries in the Tokyo Round was to seek improved and predictable conditions of access for an increasingly diversified range of export products, an improved framework for the conduct of international trade taking into account their development, financial and trade needs, and special and differential treatment where this was feasible and appropriate, including special treatment for the least developed countries. They were also concerned to ensure that any liberlization achieved would be placed in a secure footing.

In the context of the uncertain financial and economic conditions in which the Tokyo Round took place, the results achieved represent a significant improvement of trading conditions for developing countries, including the tariff treatment of their exports. The multilateral Agreements that have been negotiated will produce greater transparency in trade, reduce the scope for arbitrary use of non-tariff measures in a number of areas and provide mechanisms for consultation, aimed at greater international co-operation and more effective monitoring of trade practices. The effective working of agreed rules and procedures will be of growing importance to developing countries in the protection of their trade interests as they participate increasingly in world trade.

A major result of the Tokyo Round is the provision of a legal basis for the Generalized System of Preferences (GSP) for preferential trade relations among developing countries and for other forms of special and differential treatment for these countries, including special treatment for the least developed among them. Overall, the result achieved in this area is a positive step in terms of international trade relations and a response to a number of pre-occupations of developing countries.

However, progress in certain areas of the Tokyo Round falls below the expectations of developing countries. For example, the need has been stressed for further efforts in the field of item-related non-tarrif measures, such as quantitative restrictions. Some specific concerns of developing countries in such areas as customs valuation and anti-dumping are identified in the alternative texts of certain provisions put forward by these countries.

Three areas covered by the MTN are of special relevance to the work of Special Commission 1: tariffs, non-tariff measures, and international framework for the conduct of world trade.

Regarding tariffs, two of the major considerations governing the attitude of developing countries to the tariff negotiations in the Tokyo Round were the structure of most favoured nation (MFN) tariffs in industrialized countries, and the impact which the successive introduction by developed countries of GSP schemes had had on the duties effectively chargeable on developing countries' exports of manufactures.

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The developing countries' basic problem in relation to the industrial tariff structure of developed countries stems from the added protection given to successive stages of manufacturing by tariff escalation. Although most raw materials and many basic manufactures are either duty free or enter at low rates of duty in the majority of developed markets, products at further stages of industrial processing have tended to be more highly protected. The nominal rate of tariff does not, moreover, reflect the effective protection given to manufacturing in protected markets; the effective protection of value added in processing is frequently much higher than nominal tariff rates would suggest. Countries seeking to move from bas manufacturing or raw material extraction into more elaborate lines of production may therefore be handicapped by the high barriers raised through effective protection of value added.

As for tariffs facing exports of developing countries, data available so far are only fragmentary. Nonetheless, it appears that as a result of the Tokyo Round, the average MFN reduction on industrial products was less deep than the overall cut, about one quarter compared with one third. This reflects the fact that the products to which the tarrif cutting formula was not applied are relatively more important with regard to exports from developing countries and, to a lesser extent, that the rate of reduction affecting products eligible for the GSP was somewhat lower than the average overall cut.

With regard to non-tariff measures the negotiations took two forms. First, there were negotiations for the elaboration of multilateral agreements whose basic aim was to bring more clarity and precision to the relevant GATT provisions and a greater certainty in their application. Secondly, there were negotiations carried out mainly on the basis of requests made for the removal of specific non-tariff measures affecting particular products.

In general, the Tokyo Round resulted in the reaffirmation and strengthening of the GATT rules, coupled with effective international consultation, surveillance and dispute settlement procedures which is of importance for all countries, including the developing countries. In the area of non-tariff measures, agreements on the following are covered: subsidies and countervailing duties; technical barriers to trade; customs valuation; government procurement; and import licensing.

The Agreement on Subsidies and Countervailing Duties recognizes that subsidies are an integral part of the economic development programmes of developing countries and that governmental intervention in the economy through financial support measures should not, per se, be considered a subsidization in the case of these countries. Developing countries are not subject to the commitment made by the developed countries not to use export subsidies on industrial products, although they agree not to use such subsidies in ways which cause serious prejudice (which must be demonstrated by positive evidence) to the trade or production of another signatory. The Agreement however, inter alia, provides that developing countries should endeavour to enter into commitments to reduce or eliminate export subsidies when their use is inconsistent with their competitive and development needs.

The Agreement on Import Licensing Procedures contains provisions specifically relating to developing countries. Although there are inbuilt limitations, because of the nature of the subject, some special and differential treatment is provided for in the Agreement. From the point of view of developing countries as exporters of goods to the developed and to other developing countries, the measures taken in pursuance of provisions of the Agreement for simplification of licensing procedures and for making them more transparent should lead to a reduction in obstacles which these countries may be faced with at present. In addition, participation in the Committee on Import Licensing would enable developing countries to bring up any practical difficulties resulting from licensing procedures.

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The results for developing countries in the area of international framework for conduct of world trade of the Tokyo Round pertain to several issues. The results of the negotiations on the Enabling Clause and on safeguard action for development purposes are of special interest for the developing countries, but it can be noted that the results of negotiations on safeguard action for balance-of-payments purposes and on the question of notificaton, consultation, dispute settlement and surveillance also contain important points relating to these countries.

The single most important element in the area of Enabling Clause was the establishment of differential treatment for developing countries as an integral part of the GATT system. The Enabling Clause provides for such treatment in respect of:

- tariff preferences accorded under the GSP;
- non-tariff measures governed by codes negotiated under GATT auspices;
- tariff and, subject to conditions that may be prescribed, non-tariff preferences granted to one another by developing countries in the framework of regional or global trade arrangements; and
- special treatment for least developed countries.

With regard to safeguard action for developing countries, the purposes for which the relevant GATT provisions can be invoked have been extended so that:

- measures hitherto permitted only for the purpose of establishing a particular industry could now be used by developing countries to modify or extend existing production structures to meet the priorities of their economic development.

Developing countries are also given the possibility, in certain circumstances, of avoiding procedural delays in implementing such measures, by being allowed to take action after notification but prior to consultations or negotiations.

In addition, the following points should be brought to the attention of Special Commission 1. The GATT secretariat has been providing technical assistance to developing countries designed to help them assess the tariff results of the MTN, as well as information and explanations relating to the Codes and multilateral Agreements resulting from the Tokyo Round. Secondly, there are no specific conditions under which developing countries may obtain technical assistance from the GATT secretariat as a result of the MTN: this is available to all countries, whether or not they are members of the GATT. Furthermore, the Codes on Technical Barriers to Trade, Government Procurement and Customs Valuation contain provisions on assistance that may be provided on mutually agreed terms by developed to developing countries.

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Working Party on Problems of Certain Natural Resource Products

In November 1982, the Contracting Parties to the GATT met at Ministerial level. They recognized that the multilateral system, of which the General Agreement was the legal foundation, had been seriously endangered. Protectionist pressures on governments had multiplied. Disregard of GATT disciplines had increased and certain shortcomings in the functioning of the GATT system had been accentuated. Conscious of the role of the GATT system in the expansion of world trade, and convinced of the lasting validity of the basic principles and objectives of the General Agreement in a world of increasing economic interdependence, the Contracting Parties drew up the work programme and priorities for the 1980's.

In this work programme, there was, inter alia, a Decision adopted by Ministers on Problems in Certain Natural Resource Products. In accordance with this Decision a Working Party was set up in May 1984, with the mandate to examine problems falling under the competence of the General Agreement relating to tariffs, non-tariff measures, and other factors affecting trade in the natural resource products including in their semi-processed and processed forms, with a view to recommending possible solutions. This work involves among other sectors, non-ferrous metals and minerals.

The Working Party conducts its examination on the basis of background documents prepared by the secretariat. In the field of non-ferrous metals and minerals, this examination includes the following metals: lead, zinc, copper, tin, nickel and aluminium.

The Working Party has met several times and discussed problems in trade of lead, zinc, copper, nickel and tin. It will meet to discuss aluminium towards the end of the current year and is expected to present its report to the Council thereafter.

The need for substantial action to strengthen the multilateral trading system became a major topic of discussion in GATT bodies and elsewhere throughout 1984. A number of Contracting Parties felt that efforts should continue to be focused on the implementation of the 1982 Ministerial work programme. They beleived, especially, that the political commitments in the Ministerial Declaration - particularly those envisaging a standstill and roll-back of trade restrictions - required immediate and general observance. Many other members of GATT came to the conclusion that a comprehensive multilateral trade round was the logical, desirable and necessary final stage of a process aimed at implementing the work programme and resolving problems affecting the trading system.

At the last Council Session, a discussion took place of the possibility of a senior officals meeting which should discuss the timing, agenda and modalities for a new round of negotiations. At this moment, it cannot be stated if or when such a meeting might take place. However, there is clearly widespread support for the idea that there is a need to initiate a major effort aimed at comprehensive trade liberalization.

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III. Conseil Intergouvernemental des Pays Exportateurs de Cuivre (CIPEC)[46]

In 1967 the representatives of Chile, Peru, Zambia and the Democratic Republic of Congo (Zaire today) affixed their signatures to the 34 articles of the June 1967 agreement to establish the CIPEC (from the French, Conseil Intergouvernemental des Pays Exportateurs de Cuivre). The preamble stresses the exceptional importance of copper to these countries' economies, the need to prevent excessive fluctuations in the price of copper which would be harmful both to producers and consumers and the belief that this situation can be improved by increased cooperation and concerted action by copper exporting countries.

As of 1984, the CIPEC had five full member countries (Chile, Indonesia, Peru, Zaire and Zambia) and three associate member countries (Australia, Papua New Guinea and Yugoslavia). In the first six months of 1984 these countries accounted for 52 per cent of copper ores and concentrates production and 40 per cent of the production of unrefined metal (blister and lead cathodes) of the non-centrally planned economies. These shares have changed only slightly since 1980.

The supreme organ of the CIPEC is the Conference of Ministers in which decisions on subjects of major importance have to be taken by unanimous vote. The Governing Board which has a coordinating function with regard to individual or collective measures relating to the copper market, production processes, exports, consumption and other measures, is responsible to, and works under the general direction of the Conference of Ministers. It also is responsible for the supervision of the Copper Information Bureau dealing with all statistical, technical and related data and reports. Finally, the Executive Committee concentrates on financial matters and promotion. The location of the CIPEC headquarters is Paris, but it has been suggested to move it to Lusaka.

During its initial years most of the CIPEC's activities were of statistical and informational nature. Joint actions started to evolve in the early 1970s including, in particular, the announcement in late 1974 that the CIPEC countries would restrict their monthly exports of copper by 10% from the early 1974 levels in order to revise the disastrous trend in copper prices. Since then CIPEC activities have largely increased and consolidated, the major objectives being today to find responses to the challenge of saturated copper markets and protectionist pressures in consumer countries. In pursuance of these goals the CIPEC engages in consultations with consumer countries, research and development, search for new uses of copper, marketing, and economic and technical assistance in the framework of close cooperation with its member countries.

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Notes

[1] Economic and Social Council, Committee on Natural Resources, 'Co-ordination of programmes within the United Nations system in the field of natural resources: Minerals - Report of the Secretary-General' (Document E/C.7/1983/12 of 28 April 1983).

[2] The following paragraphs have been excerpted from the response from the DIESA.

[3] The following paragraph has been excerpted from the response from the CTC.

[4] The following paragraphs have been excerpted from the response from the UNDP.

[5] The following paragraphs have been excerpted from the response from the UNDP/UN Revolving Fund.

[6] The following paragraphs have been reproduced from document LOS/PCN/SCN.1/WP.2/Add.2. These paragraphs have been prepared on the basis of the response from the UNCTAD, and have been abstracted from the document, United Nations, Sixth International Tin Agreement, U.N., New York, 1982 (UN publication Sales No. E.82.II.D.16).

[7] The following paragraphs have been reproduced from document LOS/PCN/SCN.1/WP.2/Add.2. These paragraphs have been prepared on the basis of the response from the UNCTAD, and have been abstracted from the document, United Nations, Agreement Establishing the Common Fund for Commodities, U.N., New York, 1981 (U.N. publication Sales No. E.81.II.D.8).

[8] The value of one Unit of Account shall be the sum of the values of the following currencies converted into any one of those currencies:

United States dollar	0.40
Deutsche mark	0.32
Japanese yen	21
French franc	0.42
Pound sterling	0.050
Italian lira	52
Netherlands guilder	0.14
Canadian dollar	0.070
Belgian franc	1.6
Saudi Arabian riyal	0.13
Swedish krona	0.11
Iranian rial	1.7
Australian dollar	0.017
Spanish peseta	0.10
Norwegian krone	0.10
Austrian schilling	0.28

Any change in the list of the currencies that determine the value of the Unit of Account, and in the amounts of these currencies, shall be made in accordance with rules and regulations adopted by the Council of the Common Fund by a specified majority in conformity with the practice of a competent international monetary organization.

[9] The following paragraphs have been reproduced from a note furnished by the UNCTAD Secretariat.

[10] The following paragraphs have been abstracted from a document provided by the UNCTAD Secretariat: United Nations Conference on Trade and Development, *Compensatory Financing of Export Earnings* Shortfalls, U.N., New York, 1985 (UN publication Sales No. E.85.II.9.3, UNCTAD document No. TD/B/1029/Rev.1).

[11] The following paragraphs have been abstracted from documents provided by the UNCTAD Secretariat. These documents are: 'International co-operation in the field of processing of commodities of export interest to developing countries: elements of a framework' (TD/B/C.1/253); 'International co-operation in the field of marketing and distribution of commodities of export interest to developing countries: elements of a framework' (TD/B/C.1/252); 'Studies in the processing, marketing and distribution of commodities - The processing and marketing of copper: Areas of international co-operation' (TD/B/C.1/PSC/30/Rev.1); and 'Studies in the processing, marketing and distribution of commodities - The processing and marketing of manganese: Areas of international co-operation' (TD/B/C.1/PSC/20/Rev.1).

[12] The following paragraphs have been abstracted from documents provided by the UNIDO Secretariat. These documents are: 'Development and restructuring of non-ferrous metals industries (ID/WG.436/1),'Mining and mineral processing in developing countries'(ID/WG/436/2), Restructuring process in non-ferrous metals industries and possibilities for further processing on non-ferrous metals in developing countries'(ID/WG.436/3), 'Consultation process and methodological aspects of non-ferrous metals'(ID/WG.436/4),'Report of Expert Group Meeting on Restructuring of Non-Ferrous Metals Industries'(ID/WG.436/5), Report on nineteenth session of IDB'(ID/B/350) and Annual Report of Executive Director 1984.

[13] The following paragraph has been exercepted from the response from the UNEP.

[14] The following paragraphs have been reproduced from a note furnished by the UNEP Secretariat.

[15] UNEP Workshop on the Environmental Aspects of Non-Ferrous Metals Industries (lead/Zinc/Cadmium, Copper/Nickel) (UNEP/WS/NFM.9 (Final)).

[16] United Nations Environment Programme, *Environmental Aspects of Selected Non-Ferrous Metals Industries*: *An Overview*, 1985.

[17] United Nations Environment Programme, *Industry and Environment* vol. 5, no.1, 1982: Non-Ferrous Metals.

[18] The following paragraphs have been excerpted from the response from the ECA.

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[19] Economic Commission for Africa, 'African Intergovernmental Meeting on Aspects of Application of the Provisions of the United Nations Convention on the Law of the Sea, Addis Ababa, Ethiopia, 17-21 September 1984: Report' (ECA document ROS/AIGUNCLOS/7).

[20] The following paragraphs have been reproduced from a note furnished by the ECA Secretariat.

[21] North Pacific, Atlantic and Indian Oceans.

[22] Clarion, Clipperton and Molokai zones in the North Pacific Ocean.

[23] The following paragraphs have been excerpted from the response from the ESCAP.

[24] The following paragraphs have been reproduced from document LOS/PCN/SCN.1/WP.2/Add.2. These paragraphs have been excerpted from the response from the WB.

[25] The following paragraph has been excerpted from the response from the IMF.

[26] The following paragraphs have been reproduced from a report prepared by the staff of the IMF.

[27] Under the 1963 decision, the medium-term trend of exports was estimated by combining the results of a formula with those of a judgmental approach. Under the formula the trend was estimated by applying weights of 0.25 to exports in each of the two pre-shortfall years and 0.50 to exports in the shortfall year. The judgmental approach involved combining actual export data for three years and forecasts based on market appraisal and available information for the two post-shortfall years. In the 1966 review, it was decided to rely mostly on the qualitative method involving judgmental forecasts. In the 1975 review, an extrapolation formula for estimating the medium-term trend of exports was introduced, but in practice the formula produced unrealistic results and was abandoned in favour of the judgmental method.

[28] An upper limit was established for the average of post-shortfall exports of 10 percent above the pre-shortfall average, and a lower limit was set at the actual level in the shortfall year.

[29] The decision to change to a geometric average was taken because it was shown that the nominal value of export earnings tends to increase geometrically (i.e., at a constant rate) rather than arithmetically (i.e., by a constant amount).

[30] Developing countries are defined in accordance with the UNCTAD classification; they include countries other than industrial countries, as defined in International Financial Statistics, and Botswana, Lesotho, South Africa, Swaziland, Greece, Malta, Portugal, Yugoslavia, and Israel.

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[31] The following paragraphs have been abstracted from a document provided by the UNESCO Secretariat: Intergovernmental Oceanographic Commission, 'IOC-UN (OETB) Guiding Group of Experts on the Programme of Ocean Science in Relation to Non-Living Resources (OSNLR), First Session, Paris, 14-18 January 1985' (UNESCO document IOC-UN (OETB)/GGE-OSNLR-I/3).

[32] International Geological Correlation Programme.

[33] Deep Sea Drilling Project/Ocean Drilling Programme.

[34] Sea-level changes, Environments and Tectonics during the past Million Years.

[35] Training, Education and Mutual Assistance in the marine sciences.

[36] The following paragraphs have been excerpted from the response from the ILO.

[37] See, for example, International Labour Organisation, Programme of Industrial Activities, Fourth Tripartite Technical Meetings for Mines other than Coal Mines, Geneva, 1984: General Report, ILO, Geneva, 1984.

[38] The following paragraphs have been excerpted from the response from the FAO.

[39] IMCO/FAO/UNESCO/WMO/WHO/IAEA/UN Joint Group of Experts on the Scientific Aspects of Marine Pollution (GESAMP), Reports and Studies, No.7: Scientific Aspects of Pollution Arising from the Exploration and Exploitation of the Sea-Bed, UN, New York, 1977.

[40] The following paragraph has been excerpted from the response from the IAEA.

[41] The following paragraph has been excerpted from the response from the AsDB.

[42] The following paragraphs have been reproduced from a note furnished by the IDB.

[43] The following paragraphs have been reproduced from a note furnished by the EEC Secretariat.

[44] Reproduced from ACP-EEC Council of Ministers, The Third ACP-EEC Convention Signed at Lomé on 8 December 1984 and Related Documents, Brussels, 1985.

[45] The following paragraphs have been reproduced from a note furnished by the GATT Secretariat.

[46] The following paragraphs have been abstracted from materials available to the Secretariat.

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LOS/PCN/SCN.1/WP.5/Add.1
3 April 1986

ORIGINAL: ENGLISH

PREPARATORY COMMISSION FOR THE INTERNATIONAL
SEA-BED AUTHORITY AND FOR THE INTERNATIONAL
TRIBUNAL FOR THE LAW OF THE SEA
Special Commission 1

INFORMATION ON EXISTING INTERNATIONAL OR MULTILATERAL ECONOMIC MEASURES WHICH COULD BE OF RELEVANCE TO THE WORK OF SPECIAL COMMISSION 1

Report on the work of the United Nations Conference on Nickel and the developments regarding the formation of the International Nickel Study Group

1. The need for the establishment of an intergovernmental body on nickel was felt acutely during the late 1970s and early 1980s because the developments during that period had an extremely negative impact on the mineral sector, nickel being one of the worst affected in terms of the collapse of demand and prices. The subsequent recovery in prices was weak and uncertain. Structural factors were affecting both the demand and the supply sides. Lack of detailed worldwide data on production, consumption and trade added to the uncertainty of market conditions. There was also greater need for in-depth research and analysis on many aspects of the nickel market. Above all, policy decisions at government and industry levels were hampered by the absence of regular dialogue on the market situation and prospects and by inadequate information concerning the plans and programmes in individual countries.

2. The nickel producers and consumers, exporters and importers, under these circumstances, felt that international co-operation and appropriate institutional mechanism for such co-operation were called for. Thus, at the initiative of a number of countries, especially Australia and Canada, under the aegis of the UNCTAD, the Intergovernmental Exploratory Meeting on Nickel was held in October 1984. This was followed by the Preparatory Meeting on Nickel in April 1985. The progress of work in these meetings led to the convening of the United Nations Conference on Nickel in October/November 1985.

3. Under similar market conditions, in the mid-1950s with respect to lead and zinc industry, the producers and consumers, exporters and importers of lead and zinc formed an International Lead and Zinc Study Group under the aegis of the United Nations. Participants in the meetings on nickel came to the conclusion that international co-operation with respect to nickel and the appropriate institutional mechanism could follow similar lines as the International Lead and Zinc Study Group. The main purpose of the United Nations Conference on Nickel was to concretize these ideas in the form of establishing terms of reference and rules of procedure for such a study group on nickel called the International Nickel Study Group.

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4. The Conference was highly successful in achieving its objectives. There are only two areas where further deliberations are needed, one relating to the arrangements for the secretariat of the International Nickel Study Group, and the other relating to the contributions of the members of the Group to the secretariat. The UNCTAD is convening the second part of the United Nations Conference on Nickel in Geneva from 28 April - 2 May 1986. It is expected that the outstanding issues would be resolved, a work programme on statistics for the International Nickel Study Group would be prepared, and arrangements and draft agenda for the inaugural meeting of the International Nickel Study Group, to be held later in the year, would be finalized.

5. According to the terms of reference adopted during the Conference the objectives of the International Nickel Study Group will be to ensure enhanced international co-operation on issues concerning nickel, in particular by improving the information available on the international nickel economy and by providing a forum for intergovernmental consultations on nickel. Nickel is defined as including, inter alia, scraps, waste and/or residues and such nickel products as the Group may determine. The functions of the Group will be:

(a) To establish the capacity for and to undertake the continued monitoring of the world nickel economy and its strengths, particularly by establishing, maintaining and continuously updating a statistical system on world production, stocks, trade and consumption of all forms of nickel;

(b) To conduct between members of the Group consultations and exchanges of information on developments relating to the production, stocks, trade and consumption of all forms of nickel;

(c) To undertake studies as appropriate on a broad range of important issues concerning nickel, in accordance with the decisions of the Group; and

(d) To consider special problems or difficulties which exist or may be expected to arise in the international nickel economy.

6. As mentioned earlier, special emphasis will be placed on statistics and information, and assessment and studies. With regard to statistics and informatior the participation of industry advisers will be envisaged. The Group shall collect, collate and make available to members such statistical information on production, trade, stocks, consumption and internationally recognized published prices of nickel as it deems appropriate for the effective operation of the Group's terms of reference. The Group shall make such arrangements as it considers appropriate by which information may be exchanged with the interested non-participating governments and with appropriate intergovernmental and non-governmental organizations in order to ensure the availability of recent and reliable data on production, consumption, stocks, international trade, internationally recognized published prices and on other factors that influence the demand for and the supply of nickel. The Group shall endeavour to ensure that no information published shall prejudice the confidentiality of the operations of persons or enterprises producing, processing, marketing or consuming nickel.

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7. With regard to assessment and studies on nickel, the Group shall prepare and distribute to members an annual assessment of world nickel situation and related matters in the light of information supplied by members and supplemented by information from all other relevant sources. The Group shall, as deemed desirable, undertake or make appropriate arrangements to undertake studies on short- and long-term trends in the international nickel economy, including once a year or with the approval of the Group, more than once a year, the provision of an outlook of nickel production, consumption and trade for the following calendar year so that such an exchange of information will be a technical aid to members in their individual assessment of the evolution of the international nickel economy.

8. According to the terms of reference the membership of the Group shall be open to all States which are interested in the production or consumption of or international trade in nickel. The terms of reference shall come into effect when at least 15 States, which, in total, account for greater than 50 per cent of the world trade in nickel, have notified the Secretary-General of the United Nations that they accept the terms of reference of the Group. It is expected that such notifications will be forthcoming very soon after the second part of the United Nations Conference on Nickel. As an indicator, it may be pointed out that the participants in the Conference accounted for about 95 per cent and 90 per cent of world nickel production and consumption respectively. With respect to international organizations, the Group may make arrangements for consultations or co-operation with the United Nations, its organs or specialized agencies and with other intergovernmental institutions as appropriate.

9. The Group shall have a secretariat consisting of a Secretary-General and such staff as may be required. It should be noted that although the preparatory work for the formation of the Group has been carried out under the aegis of the UNCTAD, the Group and its secretariat will be an entity independent of the United Nations. Its funds will be provided through the contributions of its members.

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LOS/PCN/SCN.1/WP.5/Add.2
2 March 1987

ORIGINAL: ENGLISH

PREPARATORY COMMISSION FOR THE
INTERNATIONAL SEA-BED AUTHORITY AND
FOR THE INTERNATIONAL TRIBUNAL FOR
THE LAW OF THE SEA
Special Commission 1
Fifth session
Kingston, Jamaica
30 March-16 April 1987

INFORMATION ON EXISTING INTERNATIONAL OR MULTILATERAL ECONOMIC MEASURES WHICH COULD BE OF RELEVANCE TO THE WORK OF SPECIAL COMMISSION 1

Background paper by the Secretariat

1. In the course of studying the ways and means of minimizing the difficulties which would be encountered by developing land-based producer States likely to be most seriously affected by the production of minerals derived from the international sea-bed Area, and of helping such States to make the necessary economic adjustment, including the establishment of a compensation fund, Special Commission 1 came to the conclusion that it would be extremely useful to study certain existing international or multilateral economic measures which could be of relevance to its work. The Special Commission requested the Secretariat to make available to it information on such measures as well as on pertinent programmes or activities of international and multilateral organizations.

2. Documents LOS/PCN/SCN.1/WP.5 and Add.1 were submitted to the Special Commission in response to the request. These documents contained information on 23 measures/programmes/activities from 21 organizations. At the conclusion of the meeting of the Preparatory Commission for the International Sea-Bed Authority and for the International Tribunal for the Law of the Sea, held in New York from 11 August to 5 September 1986, the Commission made a further request to provide it with information on relevant measures/programmes/activities from additional organizations, within the United Nations system, whether intergovernmental or non-governmental. 1/ The present document, containing such information from 20 additional organizations, is being submitted in response to that request.

3. In order to obtain information from the most direct and accurate sources, the Secretariat requested the relevant organizations to provide such information. In

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connection with the preparation of documents LOS/PCN/SCN.1/WP.5 and Add.1, and the present document, Add.2, the Secretariat contacted 58 organizations. A combined list of those organizations is presented in annex I, arranged alphabetically within each category. In identifying the organizations to be contacted, the Secretariat relied on the guidance given to it by the Special Commission as well as on the list of organizations that participated at sessions of the Third United Nations Conference on the Law of the Sea 2/ and of the Preparatory Commission. The organizations fall into the following categories: (a) units of the Secretariat of the United Nations, (b) United Nations organizations, (c) United Nations regional commissions, (d) specialized agencies and related organizations, (e) regional development banks, (f) intergovernmental organizations, and (g) non-governmental organizations.

4. By 31 January 1987, responses had been received from most of the organizations contacted. The present document has been prepared on the basis of those responses - which in some cases included information notes prepared by the organizations themselves - as well as the materials provided by the organizations. Annex II presents information on relevant measures/programmes/activities additional to those on which information is provided in documents LOS/PCN/SCN.1/WP.5 and Add.1. The Secretariat wishes to reiterate its gratitude to the organizations concerned for their co-operation in the present undertaking.

Notes

1/ LOS/PCN/L.37, para. 23.

2/ See appendix entitled "Observers that participated at sessions of the Conference" to the Final Act of the Third United Nations Conference on the Law of the Sea, in The Law of the Sea: United Nations Convention on the Law of the Sea (United Nations publication, Sales No. E.83.V.5), pp. 187-189.

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Annex I

ORGANIZATIONS CONTACTED FOR INFORMATION OF RELEVANCE TO THE WORK OF SPECIAL COMMISSION 1

Explanation of symbol abbreviations

WP.5	Information from this organization is contained in document LOS/PCN/SCN.1/WP.5.
Add.1	Information from this organization is contained in document LOS/PCN/SCN.1/WP.5/Add.1.
Add.2	Information from this organization is contained in the present document, LOS/PCN/SCN.1/WP.5/Add.2.
NRMPA	No relevant measures/programmes/activities are carried out in this organization.
*	As of 31 January 1987, no response had been received from this organization.

A. Units of the Secretariat of the United Nations

Centre on Transnational Corporations (CTC)	WP.5
Department of International Economic and Social Affairs (DIESA)	WP.5
Department of Technical Co-operation for Development (DTCD)	*

B. United Nations organizations

African Institute for Economic Development and Planning (IEDP)	*
United Nations Conference on Trade and Development (UNCTAD)	WP.5
UNCTAD/United Nations Conference on Nickel	Add.1, Add.2
UNCTAD/GATT/International Trade Centre	Add.2, NRMPA
United Nations Development Programme (UNDP)	WP.5
UNDP/United Nations Revolving Fund for Mineral Exploration (UNDP/UN Revolving Fund)	WP.5
United Nations Environment Programme (UNEP)	WP.5
United Nations Institute for Training and Research (UNITAR)	*
United Nations University (UNU)	Add.2

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C. United Nations regional commissions

Economic and Social Commission for Asia and the Pacific (ESCAP)	WP.5
Economic and Social Commission for Western Asia (ESCWA)	Add.2
Economic Commission for Africa (ECA)	WP.5
Economic Commission for Europe (ECE)	*
Economic Commission for Latin America and the Caribbean (ECLAC)	Add.2

D. Specialized agencies and related organizations

Food and Agriculture Organization of the United Nations (FAO)	WP.5
General Agreement on Tariffs and Trade (GATT)	WP.5
International Atomic Energy Agency (IAEA)	WP.5, NRMPA
International Labour Organisation (ILO)	WP.5
International Monetary Fund (IMF)	WP.5
United Nations Educational, Scientific and Cultural Organization (UNESCO)	WP.5
United Nations Industrial Development Organization (UNIDO)	WP.5
UNIDO/United Nations Programme for the Decade on Industrial Development in Africa	*
World Bank (WB)	WP.5

E. Regional development banks

African Development Bank (ADB)	Add.2
Asian Development Bank (AsDB)	WP.5, NRMPA
Inter-American Development Bank (IDB)	WP.5

F. Intergovernmental organizations

Andes Development Corporation	*
Asian-African Legal Consultative Committee (AALCC)	Add.2
Association of South-East Asian Nations (ASEAN)	*

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Commonwealth Secretariat	Add.2
Conseil intergouvernemental des pays exportateurs de cuivre (CIPEC)	WP.5
Council of Arab Economic Unity	Add.2, NRMPA a/
European Communities (EC)	WP.5
International Bauxite Association (IBA)	*
International Hydrographic Bureau (IHB)	Add.2, NRMPA
International Lead and Zinc Study Group (ILZSG)	Add.2
League of Arab States	*
Organisation for Economic Co-operation and Development (OECD)	Add.2
Organization of African Unity (OAU)	*
Organization of American States (OAS)	Add.2
Organization of Arab Petroleum Exporting Countries (OAPEC)	*
Organization of Petroleum Exporting Countries (OPEC)	Add.2
Permanent Commission for the South Pacific (CPPS)	Add.2
West African Economic Community	*

G. Non-governmental organizations

Council on Ocean Law (COL)	Add.2, NRMPA
Inter-American Council of Commerce and Production	*
International Chamber of Commerce	*
International Co-operation for Socio-Economic Development	*
International Council of Scientific Unions (ICSU)	Add.2
International Institute for Applied Systems Analysis (IIASA)	Add.2
International Ocean Institute (IOI)	Add.2
Latin American Association of Finance Development Institutions (ALIDE)	Add.2, NRMPA

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Pan American Federation of Engineering Societies (UPADI)	*
Society for International Development (SID)	*
Third World Foundation	*

Notes

a/ Suggested contacting Economic Affairs Department of the Arab League.

Annex II

INFORMATION ON MEASURES/PROGRAMMES/ACTIVITIES OF INTERNATIONAL, INTERGOVERNMENTAL, AND NON-GOVERNMENTAL ORGANIZATIONS OF RELEVANCE TO THE WORK OF SPECIAL COMMISSION 1

A. UNITED NATIONS ORGANIZATIONS

1. UNCTAD/United Nations Conference on Nickel a/

1. The objective of the resumed session of the Conference, held at Geneva, from 28 April to 2 May 1986, was to finalize its work on the terms of reference for an international nickel study group (INSG) and outstanding issues relating to the rules of procedure. b/ c/ The latter included, first, the secretariat arrangements, i.e., whether the INSG would have a separate secretariat or a joint one with the International Lead and Zinc Study Group (ILZSG) and, secondly, the formula for budget contributions by the members of INSG, i.e., the size of a fixed share relative to a variable share, based on trade figures. Statistical matters and preparations for the inaugural meeting of INSG were also on the agenda.

2. The Conference achieved its basic objective and successfully concluded its work by adopting the terms of reference for INSG. The United Kingdom of Great Britain and Northern Ireland and Australia reserved their positions in relation to the legal status of INSG, in the light of an amendment to the terms of reference proposed by the United Kingdom at the session. This proposal was in essence aimed at limiting the liabilities of INSG and its member States. However, the reservation is not expected to delay the process of acceptance.

3. Considerable progress has been made on the issues of the secretariat and the financing formula, but the final decisions on them are expected to be taken at the inaugural meeting of INSG. It is probable that INSG will have a separate secretariat. Preparation of a programme of work on statistics for INSG has also reached an advanced stage and will be finalized on the basis of the statistical system proposed by the Statistical Committee.

4. The resolution adopted by the Conference provides for the holding of the inaugural meeting of INSG at Geneva for one week beginning on 20 October 1986 (i.e., immediately following the annual meeting of ILZSG), subject to the fulfilment of the necessary conditions in terms of the minimum number of acceptances (15 countries) and trade coverage (more than 50 per cent of the world trade in nickel). The objective of the inaugural meeting is to adopt the rules of procedure, finalize the programme of work on statistics, consider the budget and arrange for the appointment of the Secretary-General of INSG and for the elaboration of a headquarters agreement.

5. Thirty countries participated in the work of the session, representing all important producers and consumers of nickel except for the United States, which attended in the status of observer. Previously the U.S. had indicated that in any case, whether it participated or not, it was ready to co-operate with INSG.

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2. United Nations University d/

6. While the United Nations University (UNU) has not conducted any programmes dealing directly with the topic of minerals since the initiation of its operations in 1976, it has held several meetings on matters related to it, including a workshop on marine mineral resources held at Suva, Fiji, in 1983.

7. UNU has been exploring for some time the possibility of establishing an institute for natural resources in Africa (INRA) as a research and training centre of UNU. One of the priority matters on which INRA will concentrate is mineral resources development, including training programmes and related research-and-development work and policy studies in selected areas. The main centre of INRA will be located at Yamoussoukro, Côte d'Ivoire. The major research and training programme in mineral resources development will be carried out at the Mineral Resources Unit of INRA, which will be located at the School of Mining of the University of Zambia in Lusaka.

8. One of the principal objectives of INRA is to promote the development of natural resources of African countries through the generation and application of scientific knowledge and innovative technological approaches for productive work, and through the formulation of planning and policy options. Another important objective is to contribute to the strengthening of national and other institutions and the building of endogenous research-and-development and consultancy capabilities in African countries with respect to their natural resource endowment.

9. As regards mineral resources development, three priority areas have been identified: mineral endowment, technology and management, and policy options. The Mineral Resources Unit of INRA will organize professional manpower training programmes in these priority areas. It will also organize seminars for senior personnel in mining companies, "para-statal" organizations, government departments, and scientific and technological institutions in various African countries. INRA's research and development work and policy studies with respect to mineral resources development will be project-oriented in order to maximize the impact on economic development.

10. In the area of mineral endowment, INRA will focus on the collection and analysis of information on the geology and mineral resource endowment of the continent, the evaluation of exploration techniques relevant to the African geologic environment and the design of exploration techniques for use in African countries. The work in technology and management will include mining methods, mineral dressing and refining technology with a view to reducing mineral and metal recovery costs. The work will also consider the introduction of new materials as substitutes and the recycling of metals of strategic or economic importance in the industrialized countries, including the impact of such substitutes and recycled metals on new mining projects and the size of such projects in Africa. INRA will promote the development of appropriate and realistic mineral policy options in the various African countries in order to encourage investment and facilitate the mobilization and increased productivity and efficiency of the mining industries.

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B. UNITED NATIONS REGIONAL COMMISSIONS

1. Economic and Social Commission for Western Asia e/

11. Although activities addressing the problems which may be encountered by developing land-based producer States as a result of the exploitation of mineral resources in sea-bed areas are very limited in the Economic and Social Commission for Western Asia (ESCWA), it has undertaken a number of studies dealing with various issues of mineral resources development at the national, subregional and regional levels. These studies include, inter alia, surveys on the situation with regard to the development of mineral resources in the countries of the ESCWA region, the identification and promotion of investment in mineral resources development at the national and regional levels, skilled manpower needs in the mineral resources sector in the ESCWA region, etc.

12. A number of important recommendations have emerged from these studies. For example, as measures to promote investment in mineral resources development, recommendations have been made for the establishment of regional mining research institutes, consulting firms and documentation and information centres. Emphasis has been placed upon the skilled manpower training, and for this purpose recommendations have been made for the establishment of: (a) a regional training institute, including the establishment of a regional manpower development board for metallic mineral exploitation and for the industry in order to assess the precise manpower needs; (b) regional and plant-level training centres for metallic and metal-working industries; (c) a planned programme of in-plant training in developed countries; and (d) a regional institute to train senior managerial personnel. As a basic step in creating the financial support for metallic mineral exploration and exploitation and related industries, a regional metallic mineral fund has been suggested, to be created through contributions from ESCWA member countries, some of the regional banks and regional financial institutions.

2. Economic Commission for Latin America and the Caribbean f/

13. In the Economic Commission for Latin America and the Caribbean (ECLAC), the principal activities in the area of mineral resources are carried out, in general, by the Natural Resources and Energy Division, while the work on marine mineral resources is undertaken by the newly established ECLAC/UNDP Programme on Ocean Resources and Latin American Development. Various studies and reports have been prepared by ECLAC on these subjects, and an overview of ECLAC's activities with regard to the promotion of the non-ferrous mineral industry in the region can be obtained from a review of the relevant documents. g/

14. In this context, the principal objectives of the work of ECLAC include: (a) the improvement of the negotiating capacity of developing countries, in order to obtain greater participation in mineral trade and income; (b) obtaining financial resources so that prospecting and exploration can be expanded and benefits from minerals increased; and (c) the vertical integration of the production processes so as to advance the industrialization of the mining sectors. These objectives can be achieved through: a better knowledge of the regional

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mining potential; a better knowledge of the possibilities for the future development of international markets; agreements on costs and prices; industrial integration, including integration of mining and metallurgical activities; and formulation of an integrated programme on technological research.

15. Latin America possesses important comparative advantages over other regions owing to certain factors. It possesses important mineral resources, many of which have yet to be explored or exploited. It is also going through a period of rapid industrialization which requires the use of large amounts of metal-mechanical products, and it possesses structures of production oriented, to a great extent, towards export.

16. According to some estimates, projected income for the year 2000 from the production of cobalt, manganese, nickel and copper would be decreased by 26 per cent as a result of the production of marine nodules. Of this loss, estimated to amount to more than $700 million, 52 per cent would be in nickel, 32 per cent in copper, 15 per cent in cobalt, and 1 per cent in manganese.

17. As possible measures to counterbalance these negative effects, several alternatives have been suggested: (a) the exploitation of high-quality ore deposits to allow for a reduction in production costs; (b) the integration of industrial mining production at the regional or subregional level; (c) the diversification of mining production so that the four above-mentioned metals account for a smaller share of the mining sector; and (d) participation in the future income from the exploitation of marine nodules in the Area.

18. According to a study on the situation of the supply of metals in Latin America in relation to world demand for the period 1980-1990, Latin America will increase its ability to meet the world demand for copper and nickel. The region will also be in a better position to supply its own market, which is expected to grow rapidly during this period.

19. The first Meeting on the Horizontal Co-operation for Mineral Resources Development in Latin America recommended that each country carry out an inventory of research activities as well as geological, mining and metallurgical research centres, so as to meet requirements from other countries; survey present and future installed capacity of main mining equipment and machinery; and promote joint participation of Latin American and Caribbean public or private enterprises and support the establishment of an information system on mining and statistics. It was also suggested that Governments should support courses and seminars on contracts with transnational corporations for the exploration, exploitation and marketing of mining products, keeping in view the objectives of training and exchange of knowledge among experts from governmental institutions in Latin America.

20. Another important step in ECLAC's promotion of mineral resources development in Latin America and the Caribbean was the establishment of the Latin American Mining Organization (Organismo Latinoamericano de Minería - OLAMI) composed of both private and public entities. The organization has as its aims encouraging co-operation among members, so as to achieve progressive stages of geological,

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mining and metallurgical development, contributing to the Latin American integration process and fostering individual and collective action in this connection.

21. At the ECLAC-ALADI-EEC (ECLAC-Asociación Latinoamericana de Integración (ALADI)-European Economic Community) workshop held in November 1984 on policies for the mining sector in Latin America, emphasis was placed on the need to: strengthen information systems to increase the efficiency of planning and development of the sector; make regional inventories of mining resources and carry out new geological studies leading to metallogenic interpretations which would serve to encourage prospecting and exploration; gain access to technical and financial assistance from the industrialized countries and the specialized institutions dealing with these matters; set up a regional geological and mining research institute to carry out pure and applied research in the areas of prospecting, exploration and metallurgy (this institution could become an instrument for the integration of the mining sector and attract technical assistance, horizontal and international co-operation and investment to the Latin American mining sector); and seek alternative sources of technology transfer for the enterprises of Latin America, in small and medium-sized companies in the industrialized countries (this would be advantageous for the negotiations of the receiving countries because of the special characteristics of these small and medium-sized enterprises, and would result in a better contribution to the efforts of the host country).

22. At the workshop special reference was made to the importance of OLAMI, among the main functions of which would be the identification of specific projects, using the following means: (a) co-operation with private and State agencies having technological and financial capacity; (b) adaptation of mining policies and of the legal framework of the different countries, with the aim of harmonizing policies with the proposals of the integration agencies; (c) more active participation by ALADI, CARICOM (the Caribbean Community), ECLAC, the Inter-American Development Bank (IDB), the World Bank and other organizations in the development of specific co-operative projects and programmes in the mining sector; (d) external bilateral and multilateral co-operation in support of horizontal co-operation initiatives; and (e) the promotion of horizontal co-operation at the regional and extra-regional level, coupled with an adequate interchange of institutional experiences in the techno-scientific and management spheres.

23. Finally, it was proposed that the regional agencies might examine the existing state of knowledge of planning and of policy formulation and execution in the mining sector of Latin America. On the basis of this review and of experience gathered from the meetings planned to be held, the regional agencies might convene a meeting of the "actors" from the public and private sectors to examine opportunities for complementary action or horizontal co-operation in priority areas such as: financing sources and conditions; energy costs of the mining sector; comparative studies of mining codes; investment guarantees and arbitration procedures; price, tax, subsidization and tariff policies; specific promotion of small and medium-sized enterprises; and the role of public, private and mixed enterprises in the region.

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24. It is interesting to note that at the first general assembly of OLAMI, among the proposals adopted with reference to the functions of the secretariat the following two were included: (a) maintaining updated information on the evolution and development of sea-bed mining and its possible effects on land-based producers; and (b) preparing research studies on the exploration and exploitation of the sea-bed and ocean floor and the subsoil thereof beyond the limits of national jurisdiction, as well as on the activities of the Preparatory Commission for the International Sea-Bed Authority, and, in time, on those of the International Sea-Bed Authority itself.

C. REGIONAL DEVELOPMENT BANKS

African Development Bank h/

25. The African Development Bank (ADB) provides development loans to its member countries, both from ADB itself and from the African Development Fund (ADF). The efforts of the ADB group geared towards the improvement of the situation in the mineral industry in developing countries are reflected in the group's assistance to the mineral industry which are summarized in table 1.

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Table 1. African Development Bank Group Loans to the mining and extraction sectors

Institution	Loan approval year	Country	Project name	Loan amount ($)
ADB	1975	Uganda	Lake Katwe salt project	4 222 000
ADB	1976	Côte d'Ivoire/Ghana/Togo	CIMAO: Construction of cement factory	9 892 000
ADB	1978	Mauritania	Guelbs iron ore project	6 514 000
ADB	1978	Zambia	Maamba collieries rehabilitation	6 514 000
ADB	1979	Mauritania	Guelbs iron ore project II	6 587 000
ADB	1981	Liberia	NIOC rehabilitation	11 640 000
ADB	1983	Zambia	Copper mining industry	27 242 000
ADB	1984	Zambia	Maamba collieries rehabilitation II	22 261 000
ADF	1984	Cape Verde	MAIO cement industry	19 808 000
ADF	1984	Uganda	Cement industry rehabilitation study	1 092 000
ADF	1984	Zambia	Maamba collieries rehabilitation study	1 490 000
			Total	117 262 000

D. INTERGOVERNMENTAL ORGANIZATIONS

1. Asian-African Legal Consultative Committee i/

26. The Asian-African Legal Consultative Committee (AALCC) reported that it has not thus far undertaken any study on the problems which might be encountered by developing land-based producer States due to mineral production from the international sea-bed Area. It should be added, however, that AALCC's work programme at present is basically concentrated on assisting countries in achieving the optimum utilization of the resources of the exclusive economic zone.

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2. Commonwealth Secretariat j/

27. The distribution of polymetallic deposits is related to the tectonics of the mid-oceanic ridges. Exploration and development of these deep-sea resources is intricate in nature and, therefore, most of the detailed work done on them is confined to the major industrialized countries. This is due to the fact that deep-sea minerals require enormous resources for exploration, mapping, assessment and development, as well as expertise in processing technology. The industrially less advanced countries appear to require the requisite expertise for training in marine resource exploration and extraction technology.

28. The Commonwealth Secretariat is involved in providing expertise to member countries in order to enhance their capability to generate and use science and technology for resource development, and to foster their overall economic, social and environmental progress. This is being achieved through collaboration among the member countries in: the provision of scientific and technological advice within the resources of member countries; the promotion of the exchange of information and personnel; and the performance of studies designed to assist scientific and technological activities of priority and developmental significance. Collaboration is being pursued under the auspices of regional groupings such as the Commonwealth Heads of Governments Regional Meeting (CHOGRM), the Group on Maritime Issues and the Commonwealth Science Council.

29. In pursuit of the above objectives, the Commonwealth Group of Experts appointed by the CHOGRM met in Suva, Fiji, and presented a report, "Ocean management - a regional perspective: Prospects for Commonwealth maritime co-operation in Asia and the Pacific". The report contains useful information on deep-sea hard minerals in CHCGRM and CCOP/SOPAC (Co-ordinating Committee on Prospecting/South Pacific) countries. It also provides information about contacts involved in various programmes and activities in the Pacific region. The Commonwealth Secretariat is pursuing the implementation of the recommendations of this report.

30. Another expert group report, entitled "On science and technology development: An expanded programme of scientific co-operation in the Commonwealth", outlines a programme strategy for the Commonwealth Science Council. Included therein is a water and minerals resources programme area that is concerned with the exploration, assessment and development of mineral resources. Training in exploration methods involving geochemistry and geophysics has been conducted in various regions in the last two years. Activities in this sphere would be intensified in the future through regional networks of priority projects to be identified by the individual countries. Exploration of land-based polymetallic minerals appears to be the area of preference, and this should be co-ordinated with future deep-sea hard mineral development. Supply and demand laws would dictate the need for national capability in various aspects of mineral resources development.

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3. International Lead and Zinc Study Group k/

31. The four metals that are of particular interest to Special Commission 1 - copper, nickel, cobalt and manganese - do not fall within the purview of the International Lead and Zinc Study Group (ILZSG). However, it may be useful for the work of the Special Commission to have an understanding of the role of ILZSG as a study group, and of the experience of ILZSG with regard to lead and zinc.

32. ILZSG was founded by the United Nations in 1959 as an autonomous intergovernmental consultative organization. It provides a forum in which Governments can in an objective manner examine and discuss developments and problems of the world market for lead and zinc. It does not, however, interfere with the powers of individual member States to carry out their national economic policies in relation to their lead and zinc industries, nor is ILZSG involved in any trading in lead and zinc.

33. ILZSG, at present, comprises 33 member countries, including both producing and consuming countries, exporting and importing countries, market and centrally planned economies and developed and developing countries. These countries account for about 90 per cent of world production and over 80 per cent of world consumption of both lead and zinc.

34. ILZSG grew out of the concern evoked during the mid-to-late 1950s by the serious international market situation of lead and zinc - over-production, under-consumption, high stocks and low prices - a situation made more difficult by the imposition in October 1958 of import quotas by the United States, thereby placing effective limitations on a large and important world market for lead and zinc. This led a number of countries within the United Nations system to consult one another regarding possible solutions to the serious market problem. These informal consultations were followed by further efforts under the auspices of the United Nations, culminating in the establishment of ILZSG.

35. The main objectives of ILZSG as laid down in its terms of reference are: to provide opportunities for appropriate intergovernmental consultations on international trade in lead and zinc; to provide continuous, accurate information on the supply-and-demand situation and probable developments in this regard; to collect and disseminate statistics; to carry out studies on the world situation in lead and zinc; and to consider possible solutions to any special problems or difficulties which exist or may be expected to arise in lead and zinc and which are unlikely to be resolved in the ordinary development of world trade.

36. In pursuance of these objectives, ILZSG has, since its inception, published a monthly statistical bulletin providing up-to-date information on lead and zinc production, consumption, stocks, trade, prices, end-uses, secondary metal recovery and world supply and demand. l/ A consistent effort has been and continues to be made towards constant improvement in both the timeliness and the quality of the data collected and published.

37. An important contribution has been made by the special studies carried out by ILZSG. m/ An annual survey, including a five-year future projection, is made of

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new mines and smelter projects and expansions planned throughout the world, in the field of lead and zinc. Periodic studies are made of the joint production of lead and zinc; trends in production and consumption; tariffs, non-tariff barriers and trade legislation affecting lead and zinc; and environmental and health control legislation and regulations regarding lead and zinc. World directories of lead and zinc mines, metallurgical works and secondary lead and zinc plants are also maintained.

38. ILZSG has continued to exist since its formation in 1959 because it provides an essential, regular, practical and business-like forum for consultation on and discussion of matters affecting the international trade in lead and zinc, which are of common concern to the governments and industries of producing and consuming countries. In so doing, it has satisfied - and apparently continues to satisfy - its member countries and the lead and zinc industries of its member countries, all at a relatively small annual cost of membership.

4. Organisation for Economic Co-operation and Development n/

39. The Organisation for Economic Co-operation and Development (OECD) reported that it has not implemented or promoted activities, programmes or measures *per se* for the improvement of the situation in the mineral industry in the developing countries likely to be affected by the future production of minerals from the deep sea-bed. It should be noted, however, that members of OECD's Development Assistance Committee (DAC) and the multilateral development banks are providing financial and other assistance for the development of extractive industries in developing countries. DAC bilateral and multilateral aid commitments to extractive industries in developing countries amounted to $1,330 million over the period 1980-1984 (see table 2).

Table 2. OECD Development Assistance Committee's (DAC) official commitments to extractive industries

($ million)

	1980	1981	1982	1983	1984	Total
Bolivia	0 a/	-	-	-	-	0
Brazil	-	-	428	-	-	428
Burkina Faso	23	13	4	5	0	45
Burma	-	-	16	-	1	17
Burundi	-	4	-	-	-	4
Chile	-	-	-	-	267	267
Equatorial Guinea	-	-	-	-	0	0
Gabon	-	17	-	-	-	17
Guyana	-	-	-	-	2	2
Jamaica	-	-	-	0	5	5
Liberia	-	12	20	3	-	35
Madagascar	1	3	-	-	0	4
Malawi	-	-	-	0	-	0
Malaysia	1	-	-	-	-	1
Mali	0	-	1	1	1	3
Mauritania	16	-	0	0	7	23
Morocco	4	-	10	-	-	14
New Caledonia	-	5	-	13	-	18
Nicaragua	-	-	-	-	5	5
Niger	9	-	-	2	9	20
Papua New Guinea	-	13	96	-	5	114
Peru	-	-	33	0	20	53
Philippines	-	-	9	-	-	9
Portugal	-	0	-	-	-	0
Senegal	1	1	3	0	-	5
United Republic of Tanzania	-	-	-	1	-	1
Zaire	-	7	39	4	-	50
Zambia	-	28	54	27	75	184
Sub-Saharan area	-	-	1	-	6	7
Total	55	103	713	56	403	1 330

a/ Zero represents less than $0.5 million.

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5. Organization of American States o/

40. The Organization of American States (OAS) informed that thus far its activities related to the improvement of the situation in the mineral industry in developing countries has involved the convening of "Meetings I and II on the definition and scope of non-fuel mineral production statistics in America". The purpose of the meetings was to improve understanding of the statistics on mineral production and processing which are collected and/or published by the 10 participating countries. The meetings and the reports thereon dealt with 12 mineral commodities, of which manganese and copper are directly relevant to the work of Special Commission 1.

41. According to those reports, in view of the technical and administrative situations which may vary from country to country, it is not as essential to strive for absolute conformity to a single set of goals in the international reporting of mineral production statistics as it is to ensure that to the extent possible every statistical entry and/or series be clearly identified as to precisely what it represents. Armed with such knowledge, any user can make effective use of data from any of the national reporting systems.

42. The participants in the meetings generally reached agreement on a number of points and made recommendations. One group of recommendations relates to reporting concepts that are not specific to any single commodity, while another group relates to the reporting of specific commodities, including manganese and copper.

43. Under the heading of general recommendations, the use of metric system units in reporting mineral statistics is preferred. For those commodities that enter international trade in the form of ore, concentrate, or some form other than that of a pure or nearly pure metal, it is recommended that data be reported on both the gross weight and the elemental content of the material produced. When information is presented on both gross weight and content, it is recommended that the reporting reflect whether the analysis is on a wet or dry basis and that particulars be given as to the moisture content. In reporting so-called mine production, it is recommended that this be measured in terms of the first marketable stage of production (generally, although not always, a concentrate), and that in measuring this stage of production information regarding metal content be given in terms of actual analytic content, rather than on a computed so-called recoverable content basis. In reporting smelter and/or refined metal production, it is recommended that all participants include not only metal produced from newly mined materials (primary production), but also that produced from scrap (secondary production). In the case of the latter, it is regarded as important to distinguish between output derived from so-called old scrap and new scrap.

44. With regard to manganese ore, the most useful figure that can be reported for purposes of international comparative studies is the sum of: (a) the production of direct-shipping grade ore, and (b) the production of concentrates made from ores of national origin. With regard to copper, the weight of copper recovered as metal from solutions produced from ores should be included as a component in the weight of copper contained in copper concentrates (first marketable stage of production or mine production). The problems of the proper statistical treatment of so-called

copper cement and of the production of copper chemicals directly from ores and/or concentrates were considered to require further study.

6. Organization of Petroleum Exporting Countries p/

45. The principal aim of the Organization of the Petroleum Exporting Countries (OPEC) is the co-ordination and unification of the petroleum policies of member countries and the determination of the best means for safeguarding their interests, both individually and collectively.

46. OPEC devises ways and means of ensuring the stabilization of prices in international oil markets with a view to eliminating harmful and unnecessary fluctuations. Due regard is given at all times to the interests of the producing nations and to the necessity of securing a steady income to the producing countries, an efficient, economic and regular supply of petroleum to consuming nations and a fair return on their capital to those investing in the petroleum industry.

47. The OPEC secretariat services OPEC's Conference of Oil Ministers, which sets policies concerning oil production and prices. The secretariat is also research-oriented and tackles issues relating to energy in general and oil in particular. Activities with regard to other minerals lie outside OPEC's mandate, and as such, the secretariat has no information directly related to the mineral industries with which the Special Commission is concerned.

48. In 1976 OPEC member countries established the OPEC Special Fund (which is now the OPEC Fund for International Development) with the objective of assisting developing countries in their economic and social development efforts, including the development of projects and programmes as well as technical assistance. The OPEC Fund has extended loans and grants to various beneficiaries in different areas of the third world.

7. Permanent Commission for the South Pacific q/

49. The Permanent Commission for the South Pacific (Comisión Permanente del Pacífico Sur - CPPS) is an intergovernmental body which was established in 1952. It is composed of Colombia, Chile, Ecuador and Peru; Panama is also accredited through a permanent representative to the CPPS. The seat of the CPPS secretariat is Bogotá, Colombia.

50. CPPS co-ordinates the marine policies of its member States. It is responsible for the protection, preservation and exploitation of the marine resources, both living and non-living, of the central south-eastern Pacific, and for the protection and preservation of the marine environment. Its objectives include the study of, and co-ordination at the regional level of research on, conservation, exploration and exploitation of marine mineral resources both within and beyond the limits of national jurisdiction. It has been promoting activities and programmes in order to obtain a better understanding of the different legal, scientific, technical, and

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economic aspects of the utilization of the mineral resources contained in the polymetallic nodules of the sea-bed.

51. CPPS is greatly interested in all matters which relate to the study of problems confronting developing States which are land-based producers and which would be most seriously affected by the production of minerals from the sea-bed, especially bearing in mind the fact that the economies of some of the member countries of CPPS depend substantially on the exports of the same minerals which can be found in polymetallic nodules to be exploited in the Area.

52. The Cali declaration signed in January 1981 by the ministers for foreign affairs of the member countries of CPPS reiterated the need for an international régime to safeguard and protect, as the common heritage of mankind, the sea-bed and ocean floor beyond the limits of national jurisdiction, so that the exploitation of their resources does not give rise to adverse effects for the economy and income of the developing countries exporting the same products. The declaration categorically rejected the attempts to exploit unilaterally the sea-bed and ocean floor and subsoil thereof, which cannot be subject to appropriation or claims or the exercise of rights by any State or its nationals. The declaration expressed the desire of the member States to study the possibilities for the South Pacific system as a regional entity, to encourage member Governments to participate actively in the exploitation of the sea-bed and ocean floor and subsoil thereof beyond the limits of national jurisdiction. The declaration also affirmed that the International Sea-Bed Authority, which is to administer the sea-bed and ocean floor, must not be subject to the control or to the interests of a small group of Powers.

53. Subsequently, CPPS adopted in July 1983 a resolution concerning the co-ordination of the exploration and exploitation of the sea-bed. This resolution recognized that the countries of the South Pacific system require dynamic interaction with regard to information on various aspects of the exploration and exploitation of the minerals of the sea-bed. The resolution also considered that it was necessary and urgent to strengthen the machinery for co-operation within CPPS and between CPPS and the relevant international bodies and non-governmental organizations, to promote the training of personnel in the member countries of the South Pacific system and to identify areas of common interest among the member countries in the area of marine mining. The ministers for foreign affairs, consequently, requested the secretariat to take steps with a view to concluding agreements between CPPS and the relevant international bodies and non-governmental organizations. They also requested the secretariat to formulate a programme for compiling, studying and disseminating information on the processes of the exploration and exploitation of the sea-bed. In addition, the secretariat was requested to draw up a programme for the training of personnel through the organization of conferences, symposia, seminars and regional workshops.

54. A subsequent resolution recommended, *inter alia*, that the secretariat should participate in the capacity of observer at the Preparatory Commission for the International Sea-Bed Authority and for the International Tribunal for the Law of the Sea. The resolution also requested the secretariat to propose, in consultation with the Governments, specific areas of co-operation among member countries of the

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South Pacific system aimed at the training of personnel and exchange of information. It also recommended a study of the possibility of convening a regional seminar/workshop designed to enhance national and regional capabilities with regard to the exploration and exploitation of the sea-bed in collaboration with the competent bodies.

55. In a declaration of February 1984, the ministers for foreign affairs of the four member countries recognized the vital role which the non-living resources located in the maritime areas beyond national jurisdiction play in the economic and social development of their peoples, and they considered it essential to determine the means of attaining both the regional co-operation necessary for carrying out activities relating to these resources and co-ordinated links with the Preparatory Commission.

56. In compliance with the above-mentioned resolutions and declarations, and following the policies agreed to by the ministers for foreign affairs with regard to the exploration and exploitation of polymetallic nodules in the sea-bed and their effects on member States which are land-based producers, the secretariat of CPPS is preparing for the convening in 1987, jointly with ECLAC, of a major regional seminar/workshop on the development of the mineral resources of the sea-bed.

57. This seminar/workshop will be of a multi-disciplinary nature, and will, among other things, analyse the difficulties which may arise for member countries of CPPS that are land-based producers as a result of the future exploitation of minerals from the sea-bed. It is planned for this seminar to propose specific areas for regional co-operation, with the participation of other international agencies, and with a view to assisting States which might eventually be affected by the exploitation of the sea-bed. Measures will be proposed to modernize mining in the member countries, to encourage the corresponding research and to promote efficient marketing machinery. The seminar will also seek mechanisms for the training of personnel and the appropriate exchange of information, together with a study, in this context, of the possibilities for creating a regional compensation fund to protect the economic interests which might be affected by the exploitation of the sea-bed.

58. The present decade has witnessed a tendency for the developing countries to earn low prices for their metals, and this situation has not changed significantly in recent years. An abundant supply of metals exists together with a low demand for them. There is no doubt that this situation will continue, at least for some time, and it is necessary to seek mechanisms for avoiding its continued adverse effects on the economies of developing countries, particularly those of the members of CPPS. This is one of the challenges facing CPPS, and it is therefore extremely interested in the developments in Special Commission 1.

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E. NON-GOVERNMENTAL ORGANIZATIONS

1. International Council of Scientific Unions r/

59. The International Council of Scientific Unions (ICSU) reported that it does not carry on activities that are directly related to the mineral industries. There are, however, a number of undertakings within the framework of the Earth-Science Unions, the International Lithosphere Programme and the joint IUGS (International Union of Geological Sciences)/UNESCO Geological Correlation Project that are concerned with aspects of exploration geology and with orogenesis. These provide some information about the existence/potential existence of minerals.

2. International Institute for Applied Systems Analysis s/

60. The research work of the International Institute for Applied Systems Analysis (IIASA) is aimed at global policy formulation, in particular in the area of mineral resources. The findings of the research conducted at the IIASA and elsewhere, together with falling mineral prices and depressed market conditions in recent years, have led some to conclude that the availability of non-fuel minerals poses little or no threat to future human welfare. Others, however, being more circumspect, are aware that an adequate supply of mineral resources may not itself be sufficiently reassuring. Serious shortages can well occur and last for several years if investment in new mines and processing facilities is insufficient, if the demand for minerals surges in response to booms in the business cycle or if the mineral trade is interrupted by embargoes, civil disruption and other political events. In addition, new sources of mineral supplies, such as sea-bed mining, and the instability of mineral markets caused by fluctuations of the business cycle can seriously threaten families, communities, and even countries that depend on mining and mineral processing for income and employment.

61. It was concerns such as these that led IIASA to initiate, in July 1982, a research project on mineral trade and markets. One study carried out within this project considered the future effects of sea-bed mining on the cobalt, copper, manganese and nickel industries and its implications for producing and consuming States. The possible impacts of sea-bed mining were examined in three specific areas: prices and production costs, location of mining activity and the magnitude and geographic distribution of the benefits from mineral production and trade. While the analysis was largely conceptual in nature, with little or no attempt actually to quantify anticipated impacts, important variables that one would have to consider in making such quantitative assessments were identified.

62. Two general conclusions emerged from the IIASA study:

(a) Measuring the future impacts of sea-bed mining is an extremely complicated and difficult endeavour. To begin with, forecasting mineral markets 10 to 40 years into the future, even in the absence of sea-bed mining, is fraught with difficulties, although of course certain trends can be discerned and projected. Mineral markets in general are becoming more competitive over time, as the number of major producing firms and countries increases. Production is shifting from the

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developed to the developing countries for some sea-bed mineral commodities, and from the developing to the developed countries for others. Long-term secular trends in real prices can also be identified. They show decreases for some sea-bed minerals, are relatively constant for others and show increases for still others. While some of these past trends are likely to continue into the future, others will be reversed by higher energy prices, the evolution of new technologies or other developments. Forecasting which trends will continue and which will not is a hazardous business, where at best only partial success can be expected.

Even if such trends in mineral markets could be reasonably predicted, the actual amount of sea-bed mining that will take place over the next 40 years is unknown. The relative costs of sea-bed and land-based production have been the subject of much discussion and disagreement. How scientific breakthroughs and other technological developments will alter future costs is simply unknown, and to some extent unknowable. Moreover, relative costs will not be the only determinant of the future level of sea-bed mining. Industrialized countries may support such production to lessen their dependence on foreign producers. Distressed land-based producers may receive assistance from their own Governments and protection in the form of constraints of sea-bed production negotiated through international agreements. In the end, sea-bed production may be influenced as much by such political decisions as by economic considerations. Anticipating the future course of the important political decisions is not easy.

Finally, even if the future level of sea-bed mining could be ascertained, its impacts would still be difficult to assess ex ante. Such assessments may require knowledge about segments of the long-run supply-and-demand curves far from the observed price and output equilibria of the past, which limits the use of econometric and other quantitative techniques. Nor is it clear how these curves will shift over the next several decades in response to resource depletion, technological progress, the introduction of new materials, changes in minerals policies (perhaps in response to the perceived threat of sea-bed production) and other factors.

(b) The potential impacts of sea-bed mining appear to vary over a wider range and to be less bounded than often presumed. The development of new and unconventional technologies involves dealing with the unknown and entails great uncertainty. This is particularly true in the case of sea-bed mining, as the extent of its success ultimately will depend not only on economic and technological considerations but also on political developments. Since all of these factors are potentially erratic in their behaviour and thus difficult to predict, the impacts of sea-bed mining over the next 40 years on the welfare of land-based producers, consumers, and other groups range over an extremely broad spectrum, from negligible to overwhelming.

63. The IIASA study, then, points to two distinct lines of future research which appear worth pursuing:

(a) The first and probably most difficult would focus on the expected evolution of mineral production from sea-bed nodules over the next 40 years. This effort would entail a continuation and extension of work on the costs of sea-bed mining. The expected impacts of technological progress and learning-by-doing on future costs would have to be assessed, and the findings compared with those of marginal land-based producers. The conclusions regarding the potential profitability of sea-bed mining would then have to be adjusted for possible subsidies or constraints resulting from political decisions.

(b) The second line of research would assess the expected impacts of sea-bed mining on the assumption that production from this source grows over time in a given manner. In light of the inherent difficulties of actually forecasting sea-bed output, various growth patterns could be specified and their impacts assessed. What is essentially required is a better understanding of the long-run demand curves for cobalt, copper, manganese and nickel, and of the long-run supply curves for land-based production of those commodities. A better picture is needed not only of these curves as they exist today, but also of how they are likely to evolve in the future. A considerable amount of qualitative information is available from metallurgists, market analysts, mining engineers and other specialists that can be used to piece together a picture of the long-run mineral supply and demand curves. The challenge lies in identifying and collecting the pertinent qualitative information, integrating it with feasible quantitative analyses and then analysing and interpreting the results in an appropriate manner. Here, judgement and skill as well as diligence are essential.

64. Given the qualitative components of such analysis, it must however be recognized that no universally accepted statistical measures or rigorous rules exist for assessing the reliability or accuracy of the findings. Judgements regarding assumptions and interpretations must be made and will inevitably be called into question.

3. International Ocean Institute t/

65. The International Ocean Institute (IOI) has been organizing a series of training programmes in the management and conservation of marine resources, designed especially for civil servants and managers from developing countries. Three types of programmes have been conducted: class A programmes deal with all forms of ocean mining (including offshore oil); those of class B are devoted to the issues of exclusive economic zone (EEZ) management; and class C programmes cover all uses of the sea in a particular oceanic region for participants only from that region.

66. Technological changes and political and legal developments during the second half of the twentieth century have basically transformed the uses of the oceans and the role of ocean space and resources in the political and economic life of all States and the world community as a whole. The new marine sciences have opened new perspectives on our planet and people's place in it. The penetration of the industrial revolution into the oceans has added a new dimension to development strategy, and the United Nations Convention on the Law of the Sea, which was adopted in 1982 and signed by 159 States, could, if properly implemented and utilized, constitute the building-block of a new international order, including a new international economic order.

67. There are emerging new concepts, such as that of "integrated ocean management", new methodologies for calculating the contributions of the marine sector to the gross national product (GNP) and new economic theories, aimed at a synthesis between economy and ecology. The concept of the "common heritage of mankind" has the potential for changing the relationship between poor and rich nations.

68. All this requires a new type of civil servant and a new type of manager - at home in both the natural and the social sciences, the management of high technology, the management of the environment and the management of multinational human resources.

69. It is in this context that IOI's training programmes are organized. They are designed to give participants an overview of the many and varied aspects of the management both of the EEZ and the sea-bed area beyond the limits of national jurisdiction. They attempt to increase awareness of the fact that ocean management adds a new dimension to development strategy and requires broadly interdisciplinary skills, new institutional and legal infrastructures and new forms of local, national, international, intergovernmental and non-governmental organizations and corporations.

70. The basic purpose of the programmes is to improve the analytic competence of the participants on issues relating to ocean management, performance improvement, approaches, and strategic management techniques. Specifically, the objectives of the programmes are the following: (a) to familiarize the participants with all the major uses of the marine environment and its resources and with a systems approach to management; and (b) to assist participants in the ongoing process of harmonizing national legislation and integrating the policies of national and international institutional structures to maximize the contribution of the marine sector to GNP with due consideration for the conservation of marine resources and the marine environment.

71. The methodology of the training programmes is based on participatory and problem-oriented lecturing, the case method, case presentation, group sessions, field trips, simulation exercises and the presentation of reports by participants.

Notes

a/ The following paragraphs have been reproduced from a note furnished by the UNCTAD secretariat.

b/ Document LOS/PCN/SCN.1/WP.5/Add.1 contains information on the first part of the Conference held at Geneva from 28 October to 7 November 1985. It also presents a brief summary of the proposed terms of reference of INSG.

c/ For the documentation with regard to the Conference, see documents TD/NICKEL/1-12 and TD/NICKEL/CRP.1-5.

Notes (continued)

d/ Some of the following paragraphs have been excerpted from the response from UNU, and the others abstracted from a document provided by the UNU secretariat: United Nations University, Institute for Natural Resources in Africa: Prospectus, UNU, 23 August 1985.

e/ Some of the following paragraphs have been excerpted from the response from ESCWA, and the others abstracted from documents provided by the ESCWA secretariat. These documents are: "Progress made in the implementation of the work programme: Addendum" (E/ECWA/XI/4/Add.1); "Report on improvement of national mining codes and assessment of the situation with regard to full sovereignty of member countries over their mineral resources" (E/ECWA/NR/11); and "Survey report on the situation pertaining to the development of mineral resources in the countries of the ECWA region" (E/ECWA/NR/1/Rev.2).

f/ The following paragraphs have been reproduced from a note furnished by the ECLAC secretariat.

g/ In this connection, see "Evolución y perspectivas del sector minero en América Latina" (E/CEPAL/R.265); "Oferta de América Latina y demanda de los mayores mercados mundiales de los principales metales 1970-1990: aluminio, cobre, hierro, níquel, plomo, zinc, estaño" (E/CEPAL/L.269); "Informe de la Reunión de Cooperación Horizontal para el desarrollo de los recursos mineros de América Latina" (E/CEPAL/G.1207); "Organismo Latinoamericano de Minería - OLAMI - Consideraciones sobre su creación y aportación futura al desarrollo minero-metalúrgico de América Latina" (LC/R.392); "Technical assistance and technology transfer in the Latin American mining and metallurgical sector" (LC/R.393); "Los Estatutos del Organismo Latinoamericano de Minería y el Acta de la reunión de aprobación de los mismos"; "The Latin American mining and metallurgical sector: Technical and economic co-operation" (publication by ECLAC, ALADI and EEC, 1985); "Desarrollo de los recursos mineros de América Latina" (Estudios e Informes de la CEPAL, No. 48, junio de 1985); "Reunión de empresarios minero-industriales de América Latina: Posibilidades y propuestas de cooperación horizontal a nivel empresarial, septiembre de 1985"; and "Primera Asamblea General Ordinaria del Organismo Latinoamericano de Minería, celebrada en Buenos Aires los días 12 y 13 de septiembre de 1985".

h/ The following paragraph has been excerpted from the response from ADB.

i/ The following paragraph has been excerpted from the response from AALCC.

j/ The following paragraphs have been excerpted from the response from the Commonwealth Secretariat.

Notes (continued)

k/ Several of the following paragraphs have been excerpted from the response from ILZSG, and the others abstracted from documents provided by the ILZSG secretariat. These documents are: "International Lead and Zinc Study Group: Terms of reference, Rules of procedure, Committees of the Study Group, Headquarters agreement" (ILZSG, London, January 1979); "The International Lead and Zinc Study Group" (ILZSG, London, November 1983); "Report of the thirteenth session of the International Lead and Zinc Study Group" (ILZSG, London, October 1985).

l/ Lead and Zinc Statistics: Monthly Bulletin of the International Lead and Zinc Study Group, monthly, ILZSG, London.

m/ In this connection, see "The market situation for lead" (ILZSG, London, January 1986); "Principal uses of lead and zinc, 1960-1983" (ILZSG, London, June 1985; "World trade in lead and zinc" (ILZSG, London, June 1985); "World directory: Secondary lead plants" (ILZSG, London, April 1985); "Environmental and health controls on lead" (ILZSG, London, April 1985); and "Lead in Gasoline, 1984" (ILZSG, London, February 1985).

n/ The following paragraph has been excerpted from the response from OECD.

o/ Several of the following paragraphs have been excerpted from the response from OAS, others abstracted from a document provided by the OAS secretariat: "Report of II Meeting on the Definition and Scope of Nonfuel Mineral Production Statistics in America" (OAS/Bureau of Mines, United States Department of the Interior, Washington, D.C., September 1985, Minerals Information Contract Report, Contract No. J0145048).

p/ Several of the following paragraphs have been excerpted from the response from OPEC, others abstracted from a document provided by the OPEC secretariat; "Statute of the Organization of the Petroleum Exporting Countries" (OPEC, Vienna, July 1983).

q/ The following paragraphs have been excerpted from a note furnished by the CPPS secretariat as well as from a presentation made by the representative of CPPS at the 34th meeting of Special Commission 1, New York, 2 September 1986.

r/ The following paragraph has been excerpted from the response from ICSU.

s/ The following paragraphs have been abstracted from a document provided by IIASA: John E. Titon, "The impact of seabed nodule mining: A qualitative analysis" (Summary of Research Report RR-83-33, IIASA, Laxenburg, Austria).

t/ The following paragraphs have been excerpted from the response from IOI.

LOS/PCN/SCN.1/WP.5/Add.3
16 February 1989

ORIGINAL: ENGLISH

PREPARATORY COMMISSION FOR THE
INTERNATIONAL SEA-BED AUTHORITY
AND FOR THE INTERNATIONAL TRIBUNAL
FOR THE LAW OF THE SEA
Special Commission 1
Seventh session
Kingston, Jamaica
27 February-23 March 1989

INFORMATION ON EXISTING INTERNATIONAL OR MULTILATERAL ECONOMIC MEASURES WHICH COULD BE OF RELEVANCE TO THE WORK OF SPECIAL COMMISSION 1

Report on the work of the Third Regional Conference on the Development and Utilisation of Mineral Resources in Africa

Addendum

1. The Third Regional Conference on the Development and Utilisation of Mineral Resources in Africa was held at Kampala from 6 to 15 June 1988. It was organised by the Government of Uganda under the auspices of the Economic Commission for Africa (ECA). It followed the first regional conference held at Arusha, United Republic of Tanzania, in 1981 and the second held at Lusaka in 1985, where various subjects related to mineral resources development were considered and recommendations adopted for implementation at national, regional and subregional levels.

2. The Conference was organised in two sessions. The first session was the Technical Preparatory Committee meeting held from 6 to 10 June 1988, at which participants presented their papers, discussions were conducted and recommendations proposed. The second session was a ministerial meeting at which ministers responsible for mineral resources development in Africa considered the work of the Technical Preparatory Committee and adopted recommendations.

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3. According to the Chairman of Special Commission 1:

> "Since some of the African States might be among the developing land-based producer States most likely to be seriously affected by future sea-bed production, the Special Commission had an immense interest in information about the work of the Kampala Conference. The Special Commission heard reports about the Conference from two delegates, from Zambia and Uganda, who attended the Conference, and from the Secretariat." (LOS/PCN/L.63, para. 12)

The Chairman further stated:

> "The Special Commission was appreciative of the endeavours of the African States. The Special Commission wishes to have a report on the Conference along with its recommendations, as well as the statements made in the Special Commission by Uganda, the current Chairman of the Conference and the Secretariat, as part of its records. The Secretariat is urged to contact ECA so that arrangements could be made to this effect." (LOS/PCN/L.63, para. 17)

4. The present paper has been prepared in response to the above request. Annex I contains the statement by Uganda. ECA, having been contacted by the Secretariat, transmitted a report which is contained in annex II. The statement by the Secretariat is contained in annex III. Minor editorial changes have been made in the two statements and in the report from ECA in order to avoid duplication of contents and for the sake of brevity.

Annex I

STATEMENT BY UGANDA

1. Since some of the issues related to the development and utilisation of sea-be resources are similar to the ones which the Kampala Third Regional Conference on mineral resources development and utilisation addressed, the Uganda Government, as current Chairman of the Conference, requested me to brief this Special Commission on what was deliberated upon and the recommendations adopted.

2. Such regional conferences on mineral development have been held since 1981 and they are a result of the decision taken by the heads of State or Government of the States members of the Organisation of African Unity (OAU) at their first economic summit at Lagos in 1980 when they adopted the Lagos Plan of Action for the Economic Development of Africa to the year 2000.

3. The central theme of the Lagos Plan of Action was the promotion of a self-reliant, integrated and self-sustaining socio-economic development in the African region. Accordingly, the Plan addressed two main objectives: it emphasised the focusing of development effort on policies, plans and targets that reflect internal demand rather than the demand of developed countries; and it called for a shift to reliance primarily on domestic rather than imported factor inputs.

4. The mineral sector, therefore, must be seen to conform to these objectives through the use of national, regional and subregional institutions to develop to the full Africa's mineral resources in order to serve the needs of the region.

5. Such conferences, held under the aegis of the Economic Commission for Africa (ECA), provide an opportunity for technocrats and policy makers in the field of mineral development to meet and to formulate appropriate policies geared towards the development and rational use of the mineral resources of Africa.

6. The first conference was held at Arusha, United Republic of Tanzania, in 1981 and the second at Lusaka in 1985. The third, held at Kampala from 6 to 15 June 1988, evaluated what had been achieved in the last eight years.

7. The conference was attended by representatives of 21 African countries: Algeria, Burkina Faso, Burundi, Chad, Côte d'Ivoire, Egypt, Equatorial Guinea, Ethiopia, Guinea, Liberia, Mauritania, Mozambique, Nigeria, Rwanda, Senegal, Sudan, Uganda, United Republic of Tanzania, Zaire, Zambia and Zimbabwe. The following international institutions and observers were also represented: OAU, the United Nations Development Programme (UNDP), the United Nations Conference on Trade and Development (UNCTAD), the United Nations Office for Ocean Affairs and the Law of the Sea, the United Nations Industrial Development Organisation (UNIDO), the Unite Nations Educational, Scientific and Cultural Organisation (UNESCO), the Centre on Transnational Corporations (CTC), the Eastern and South African Mineral Resources Development Centre, the Central African Mineral Resources Development Centre, Nitro Nobel of Sweden, BRGM of France, the Commission for the Geological Map of Africa,

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the International Labour Organisation (ILO), Radiator and Tinning Ltd. of Zimbabwe and the Regional Survey and Remote Sensing Centre at Nairobi.

8. The conference was held in two sessions. The first session, from 6 to 10 June 1988, was of the Technical Preparatory Committee meeting. At the meeting, technocrats in the field of earth sciences discussed the working papers presented by the ECA secretariat on the various subjects and discussed various technical papers and statements presented by the conference participants. At the end of the session, recommendations were formulated for consideration at the ministerial meeting which followed. The second session of the conference, which took place from 13 to 15 June, was of ministers responsible for mineral matters in the States members of OAU. The ministers considered the report of the Technical Preparatory Committee meeting together with the recommendations. The recommendations were adopted to form the Kampala Programme of Action.

9. At the meeting of the Technical Preparatory Committee the following items were discussed:

(a) The progress in the implementation of the recommendations of the two previous meetings, including the review of reports on activities in each member State, subregional centres and international organisations with regard to developments in the mining sector;

(b) The report on national mineral development policies in Africa and their effect on intra-African co-operation in mineral resources development and utilisation, including country reports reviewing national mineral development policies indicating what aspects of those policies have enhanced or hindered intra-African co-operation in the development and utilisation of minerals in the region and proposing how such policies could be improved to strengthen the desired co-operation by countries in the mineral sector;

(c) The report on the possibility of establishing African associations concerned with specific minerals or groups of minerals;

(d) The report on the regional survey of copper and aluminium fabricating facilities and prospects for intra-African manufacture and trade in copper and aluminium-based products;

(e) The report on the possibility of establishing a special mechanism within the African Development Bank (ADB) for financing mineral development projects in Africa;

(f) The report on the development of the African mineral sector during the period 1985-1987 and projected prospects to beyond 1990.

10. The above ECA secretariat working papers were supplemented by the following technical papers and statements by the various conference participants: appraisal and evaluation of the role, relevance, achievements and contributions of the Eastern and South African Mineral Resources Development Centre based in Dodoma, Tanzania; research on the application of Tororo rock phosphate as a fertiliser in

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Uganda soils; the role of the Central Laboratories of Geological Survey and Mine Department in Uganda; mineral resource development and related environmental pollution problems in Uganda; occurrence, production and economic status of tin in Uganda; alkali stabilization of laterite soils in Uganda - a potential construction and ceramic material; alternative cements based on lime-pozzolanas in Uganda; Uganda gold potentials and constraints; concerns of African mining States with respect to the impact of future sea-bed production on their export earnings; outline of CTC technical assistance programmes in mineral investment projects in developing countries; and UNESCO's supportive role in the training of earth scientists.

11. The Kampala Programme of Action adopted by the meeting of ministers contains the following elements:

(a) The need was expressed to set up an effective monitoring mechanism for the implementation of the recommendations of the regional conferences. It was noted by the ministers that the Lusaka Programme of Action had entrusted this task to the regional and subregional institutions. Therefore, it was decided to call upon the Executive Secretary of ECA and OAU to urge the executive heads of the regional and subregional institutions to respond to the Lusaka Programme of Action and to report to the fourth ministerial meeting to be held in 1990 in Zaire;

(b) The establishment of upstream and downstream industries in Africa under the aegis of subregional economic groupings and intrasubregional arrangements was recommended;

(c) States were called upon to join the regional and subregional institutions as established under the Lagos Plan of Action in order to promote co-operation among African States in the development and utilisation of mineral resources. It was noted with regret that not all States had joined those regional groupings and therefore the Executive Secretary of ECA was called upon to take up the matter with the heads of State of OAU. It was also recommended that mineral development institutions as the regional level be set up in West and North Africa;

(d) The ministers considered premature the proposal by ECA to form African associations concerned with specific minerals or groups of minerals. Instead they recommended intensified interaction among member States and African producers of mineral raw materials and mineral-based products under the auspices of the economic groupings;

(e) The meeting noted the need to restructure and harmonize the existing national mineral development policies, and therefore, States members of OAU were called upon to co-operate in the exchange of information and experiences among themselves and with the relevant institutions in the field of mineral development and utilization;

(f) The meeting noted the need for ECA to organize seminars aimed at examining (i) the full potential in Africa for the development of small-scale mining for precious and semi-precious minerals; (ii) the current status of small-scale mining for precious and semi-precious minerals in Africa; and (iii) the

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legislative and fiscal régimes governing small-scale mining for precious and semi-precious minerals in various African countries;

(g) The urge was expressed to have regular consultations among Governments, producers of bauxite and alumina, copper fabricators, and consumers, under the auspices of the existing subregional and regional institutions, to determine the prospects for increased intra-African manufacture and trade in copper and aluminium-based products;

(h) ECA was called upon to approach ADB to set up a financing facility for the mineral development projects in Africa;

(i) The need was expressed to develop phosphate and potash fertiliser industries strategic for the agricultural industry;

(j) Given the likelihood that the recovery of minerals in the international sea-bed areas could adversely affect the economies of developing land-based producers of similar resources, and the principle that the exploitation of mineral resources in the international sea-bed area ought to benefit mankind financially as a whole, it was stressed that the participation of developing countries in the ongoing negotiations of the Preparatory Commission for the International Sea-Bed Authority and for the International Tribunal for the Law of the Sea should ensure: (i) the preservation of the fundamental concept of the equitable share of financial benefits accruing from the commercial exploitation of the common heritage resources; and (ii) the formulation of modalities for the establishment of a compensation fund or the implementation of other compensatory measures. The ministers noted the commendable job of the United Nations Office for Ocean Affairs and the Law of the Sea in the servicing of the Preparatory Commission and recommended continued co-operation between ECA and the Office in assisting member States to achieve the above objectives;

(k) The meeting called upon the international community to assist in the implementation of the Kampala Programme of Action;

(l) It was noted that future regional conferences should involve industries, universities and labour groups so as to ensure an effective and integrated follow-up to the recommendations;

(m) There was an urge for effective dissemination of the recommendations of the regional conferences at the national, subregional and regional levels;

(n) It was urged that African and foreign investors should encourage the formation of African mining and mineral-based industries and multinational corporations, in which they should invest in order to reduce the over-dominance of foreign companies in the mineral sector;

(o) The establishment of an effective transport system was recognised as one of the means for enhancing intra-African trade in mineral commodities;

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12. I would like on behalf of my Government in Kampala to extend my sincere gratitude to the Special Representative of the Secretary-General for the Law of the Sea for making arrangements for the Secretary to Special Commission 1 to attend the Kampala Conference. The Secretariat contributed effectively to the success of the Conference.

13. I also appreciate the interest members of this Commission have shown in the deliberations of the Kampala Conference. In fact, Mr. Everistos Kambaila of the Zambian delegation effectively represented your interests, and he made very constructive contributions to the Conference.

Annex II

REPORT BY THE ECONOMIC COMMISSION FOR AFRICA

1. The Third Regional Conference on the Development and Utilisation of Mineral Resources in Africa reviewed the progress in the implementation of the recommendations of the two previous regional conferences (Arusha, 1981, and Lusaka, 1985) including review of reports on activities in each member State, subregional centres for mineral resources development in Africa and international organizations with regard to developments in the mining sector.

2. It also considered reports on (i) national mineral development policies in Africa and their effect on intra-African co-operation in mineral resources development and utilization, including country reports reviewing national mineral development policies indicating what aspects of those policies have enhanced or hindered intra-African co-operation in the mineral sector in the region, and proposing how such policies could be improved to strengthen the co-operation by countries in the mineral sector; (ii) the possibility of establishing African associations concerned with specific minerals or groups of minerals; (iii) the regional survey of copper and aluminium fabricating facilities and prospects for intra-African manufacture and trade in copper and aluminium-based products; (iv) the possibility of establishing special mechanisms within the African Development Bank (ADB) for financing mineral development projects in Africa; and (v) the development of the African mineral sector during the period 1985-1987 and projected possible prospects to beyond 1990.

3. The main observations and recommendations of the Conference concerning the above-mentioned topics are summarised below.

Implementation of recommendations of conferences

4. An effective monitoring mechanism for the implementation of the recommendations of the regional conferences is necessary. Such a mechanism should be composed of African regional and subregional institutions concerned with mineral resources development and/or the economic development of the continent.

Impact of mineral sector on the economy of the Economic Commission for Africa member States

5. The maximum impact of the mineral sector on the economy of member States of the Economic Commission for Africa (ECA) would be realised where regional upstream and downstream industries based on mineral production exist. The Conference recommended that member States, through their own or through the existing subregional economic groupings and intra-subregional arrangements, take all necessary measures to acquire the necessary capabilities to develop their resources in the interest of their continent.

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Subregional centres for mineral resources development

6. Not all member States have joined the existing subregional centres for mineral resources development, and there are some subregions without these institutions. Member States which have not joined their respective centres are urged to do so, and ECA is requested to carry out detailed studies on the feasibility of establishing similar centres in the West and North African subregions.

African associations concerned with specific minerals or groups of minerals

7. The formulation of such associations at this stage is premature. Interaction among member States and African producers of mineral raw materials and mineral-based products, under the auspices of relevant regional and subregional institutions, should be intensified in order to improve the contribution of the mineral industry to the economic and social advancement of the African region.

Harmonization of existing national mineral development policies

8. There is a need to restructure and harmonise existing national mineral development policies. Member States should assess their current policies and practices, share information and experiences among themselves and with relevant institutions within and outside the region, with a view to evolving national mineral devlopment policies that will promote and sustain co-operation among themselves in the mineral sector.

Small-scale mining of precious and semi-precious minerals

9. This is a growing activity in many African countries which is affected by many constraints including illicit trade, which deprives Governments of substantial foreign exchange earnings. ECA in collaboration with subregional institutions should convene seminars aimed at examining (i) the full potential in Africa for the development of small-scale mining for precious and semi-precious minerals; (ii) the current status of small-scale mining for precious and semi-precious minerals in Africa whether illicit or legal; and (iii) the legislative and fiscal régimes governing the small-scale mining of precious and semi-precious minerals in various African countries.

Regional survey of copper and aluminium fabricating facilities in Africa

10. Regular consultations among Governments, producers of bauxite and alumina, copper fabricators, and consumers, under the auspices of existing subregional and regional institutions, should be organised in order to determine prospects for increased intra-African manufacture and trade in copper and aluminium-based products. ECA, in collaboration with other relevant United Nations agencies, existing regional and subregional institutions and Member States, should prepare a detailed study on the subject, with the participation of fabricators and consumers.

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Financing of mineral development projects in Africa

11. ADB should set up a mechanism for financing new mineral resources development projects and the rehabilitation of existing production facilities, as it has done for agriculture, industry and other sectors. ECA should also approach the Arab Bank for Economic Development in Africa (BADEA) to determine how the Bank could support mineral development projects in the region.

Contribution of the mineral sector to Africa's agriculture

12. Some African countries are endowed with phosphate and potash deposits that have been identified and evaluated. ECA, in co-operation with regional and subregional organisations, should promote the development of those deposits as well as research on sulphur in Africa so as to boost agricultural production.

Sea-bed mining

13. Sea-bed mining is a possible future alternative source of nickel, copper, manganese, cobalt and other minerals produced in land-based mining operations, and it is likely that the recovery of minerals in international sea-bed areas could adversely affect the economies of developing land-based producers of similar mineral resources. African member States which are aware of the principle that the exploration of mineral resources in international sea-bed areas should financially benefit mankind as a whole are urged to participate in the ongoing negotiations of the Preparatory Commission for the International Sea-Bed Authority and for the International Tribunal for the Law of the Sea in order to ensure (i) the preservation of the fundamental concept of the equitable sharing of financial benefits occurring from the commercial exploitation of the common heritage resources; and (ii) the establishment of the modalities for the payment of financial compensation or the implementation of other means of compensation, including economic adjustment schemes so as to mitigate the adverse impact of mining the resources of the common heritage of mankind on the economies of developing land-based producer States. Co-operation between ECA and the United Nations Office for Ocean Affairs and the Law of the Sea in assisting member States to achieve the above objectives is stressed.

14. In conclusion to its work, the Conference requested the African and foreign investors to encourage the formation of African mining and mineral-based industries and multinational corporations in which they should invest in order to reduce the over-dominance of foreign companies in the sector and to allow African countries to exercise their sovereignty over their mineral resources, and stressed the importance of co-operation among the African countries at regional and subregional levels, to enhance intra-African trade in mineral raw materials and semi-finished and finished products.

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Annex III

STATEMENT BY THE SECRETARIAT

1. Reducing export dependency on developed country consumers; taking advantage of the "insulated boom" in the market for gold, diamonds and precious and semi-precious stones; integrating mineral policy in the national development policies: these appeared to be the three major themes of the mineral community of Africa, as expressed or implied in statement after statement during the Third Regional Conference on the Development and Utilisation of Mineral Resources in Africa.

2. The depressed level of demand for minerals among the traditional developed country consumers as a result of the slowed-down pace of economic growth, substitution of "mature" minerals by other materials, secondary production of metals in developed countries, competition with developed country suppliers: all these factors led the African mineral experts to think of the alternative of utilising the minerals in the producing country itself or in the African region, to the greatest extent possible. The market for the fabricated end-products is relatively less depressed, and moreover some of the end-products can be used in the producing country itself or in the region, substituting for imports from developed countries, and also responding to new demand creation. Problems in this regard are of course many, the most important of which are: (a) lack of investment funds for fabricating industries; (b) lack of knowledge about the overall import substitution and new demand potentials in the region; (c) difficulties in breaking traditional trading patterns, including end-product import policy dominated by aid donors; (d) urgency of earning foreign exchange while awaiting opportunities for the minerals to be absorbed in the region; and (e) difficulties involved in multinational planning to match regional demand with regional supply.

3. Precious and semi-precious metals and stones experienced relative stability after the boom in the late 1970s and early 1980s. This encouraged prospecting, exploration and production of these minerals as well as rehabilitation of old mines. Small-scale mining is taking a prominent role. However, "smuggling" has posed a tremendous problem. Lack of knowledge about deposits is another significant problem.

4. The economies of many African countries are predominantly agricultural. However, problems in the agricultural sector in recent years have goaded African experts to look for solutions in the mineral sector - for example, phosphates to be used in fertilisers, aggregates to be used in buildings, metals to be used in agricultural equipments, etc. A need is thus felt for integrating mineral policy with agricultural policy and thus with national development policy. In the countries which traditionally have a large mining sector, mineral policy is dominated by the legacy of the past colonial owners and operators. Mineral policies in those countries need to form an integral part of national development policies. While the need is felt, the problems are (a) lack of experience in integrated planning and (b) the resistance of the vested interest groups.

5. Within the framework of these major items, one sub-theme was the future threat of sea-bed minerals to the African mining industry. A statement was made by the Secretariat, which emphasised the following: (a) the awareness of the international community and its efforts especially in the forum of the Third United Nations Conference on the Law of the Sea with regard to the minimisation of such threats; (b) the need for a balance between the development of the "common heritage of mankind" from which African developing countries can benefit and the protection to developing land-based producers; (c) the existing provisions in the United Nations Convention on the Law of the Sea addressing the issue, i.e., the production limitation formula, discouragement of unfair economic practices in sea-bed mining and promotion of commodity agreements; (d) the current metals market and the current stage of technology development pointing to a time horizon for sea-bed mineral development, which is beyond the nearest future, and, of greatest importance, (e) the present deliberations in Special Commission 1 of the Preparatory Commission for the International Sea-Bed Authority and for the International Tribunal for the Law of the Sea addressing the issue. The Conference appeared to have appreciated the contents of the statement, and it drew up a draft recommendation on the matter to be adopted by the ministers, which took note of the work of the United Nations Office for Ocean Affairs and the Law of the Sea in the field of sea-bed minerals and in servicing the Preparatory Commission and urged continued co-operation between ECA and the Office in ensuring that the deliberations in the Preparatory Commission achieve the desirable outcomes.

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LOS/PCN/SCN.1/WP.5/Add.4
7 March 1990

ORIGINAL : ENGLISH

PREPARATORY COMMISSION FOR THE INTERNATIONAL
SEA-BED AUTHORITY AND FOR THE INTERNATIONAL
TRIBUNAL FOR THE LAW OF THE SEA
Special Commission 1
Eighth Session
Kingston, Jamaica
5-30 March 1990

INFORMATION ON EXISTING INTERNATIONAL OR MULTILATERAL ECONOMIC MEASURES WHICH COULD BE OF RELEVANCE TO THE WORK OF SPECIAL COMMISSION 1

Background paper by the Secretariat

1. In the course of studying the ways and means of minimizing the difficulties which would be encountered by developing land-based producer States likely to be most seriously affected by the production of minerals derived from the international sea-bed Area, and of helping such States to make the necessary economic adjustment, including the establishment of a compensation fund, Special Commission 1 came to the conclusion that it would be extremely useful to study certain existing international or multilateral economic measures which could be of relevance to its work. The Special Commission requested the Secretariat to make available to it information on such measures as well as on pertinent programmes or activities of international and multilateral organizations.

2. Documents LOS/PCN/SCN.1/WP.5, Add.1, Add.2 and Add.3 were submitted to the Special Commission in response to the request. These documents contained information on 38 measures/programmes/activities from 35 organizations. At the conclusion of the meeting of the Preparatory Commission for the International Sea-Bed Authority and for the International Tribunal for the Law of the Sea, held in New York from 14 August to 1 September 1989, the Commission made a further request to provide it with supplementary and updated information on some of the existing measures/programmes/activities, in particular, those of the Common Fund, the United Nations Industrial Development Organization (UNIDO) and the United Nations Department of Technical Co-operation for Development (UN/DTCD). The present document containing such information is being submitted in response to that request.

3. In order to obtain information from the most direct and accurate sources, the Secretariat requested the relevent organizations to provide such information. By 28 February 1990, responses had been received from the United Nations Conference on Trade and Development (UNCTAD), UNIDO and UN/DTCD. The present document has been prepared on the basis of those responses — which in some cases included information notes prepared by the organizations themselves — as well as the materials provided by the organizations. The Secretariat wishes to reiterate its appreciation for the continued co-operation of the organizations concerned.

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I. UNITED NATIONS DEPARTMENT OF TECHNICAL CO-OPERATION FOR DEVELOPMENT (UN/DTCD)[1]

Assistance in mineral sector

4. The United Nations Department of Technical Co-operation for Development (UN/DTCD) has been providing technical assistance for mining for over 30 years. During this time the Department has helped almost every developing country to build up geological survey, state mining companies, laboratories and scientific service agencies for the mining industry. DTCD has carried out large-scale geological mapping programmes, airborne surveys and detailed mineral exploration, including geochemical, geophysical and drilling services. It has been estimated that at today's value, over one billion US Dollars have been spent since 1959 on hundreds of mineral projects in about 100 countries. About 1.1 million line-km of airborne surveys have been flown and more than three million geochemical analyses have been performed. This work has assisted in the discovery of ore deposits whose contents have been valued at many billions of dollars.

5. Traditionally, technical co-operation in the field of minerals has been focused on mineral exploration and on institutional strengthening of government services, mainly geological surveys. While this remains a major part of the Department's programme, technical co-operation has been reoriented to include also an increasing share of investment-related activities. In the present economic environment with the relative difficulty of obtaining investment and in light of the policies of most Governments, the United Nations system and international development banks encourage investment-related projects.

Investment advisory services

6. At the moment, the demand for investment advisory services has grown in relative weight as measured by the budgets allocated to them, the number of missions organized and the importance attached by governments. In 1988-1989, the Department delivered about $US 6 million in investment advisory services. This figure translates into over 200 missions by individual consultants, the services of a number of resident mineral economists or investment advisors, several contracts with international consulting, law and investment banking firms, together with a large training component.

7. Investment-related activities are often sequential to co-operation in exploration and institution strengthening. Once an investment-related project is undertaken, the sequential process extends from designing a mineral policy involving the formulation of policy instruments such as mineral development code, subsidiary regulations dealing with mines safety, tax, investment, environmental protection etc., and a model agreement; systematic investment promotion involving the assessment of the legal, fiscal and administrative investment conditions, recommendations for reform and the preparation of an extensive, detailed investment prospectus; assistance in investment negotiations; monitoring of agreements; and support in arranging financing and

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building up marketing capabilities. UN/DTCD's investment advisory services encompass all these aspects of the sequential process, and include training as a component in each phase.

8. There are two main lessons concerning investment advisory services in developing countries: first, continuity is invaluable and second, advisors should be engaged early in strategy, not just late in negotiations. Continuity allows an advisor to become expert in the myriad needs and conditions of the client, and gives a client time to become expert in the use of the advisor. A long-term relationship allows the best use of international expertise by a recipient government, and having experienced advisory service well-tuned to the situation strengthens and improves every deal, from concept through final contract. Likewise, an advisor who is committed early to a possible project acquires memory of its particularities and is much better able to provide sound advice in the latter stages - should those be reached - and would be the case were he summoned to the negotiation table after all the early stages had been worked through.

9. UN/DTCD's mineral sector is mainly funded by the United Nations Development Programme (UNDP); counterpart contributions (mostly in kind) are usually provided by the respective participating developing countries. The Department has only a modest budget. UN/DTCD functions as an executing agency, spending UNDP funds on project personnel, services, training and equipment. In return, it receives 13 per cent of these expenditures to cover overhead. (The overhead is relatively low for the type of project the Department executes. These projects require much technical and administrative time and international communication. By comparison, international commercial contractors charge overheads ranging from 60 to 150 per cent on service contracts similar to UN/DTCD's projects).

10. Currently, UN/DTCD's annual input into technical co-operation projects amounts to about $US 160 million of which $US 15-20 million is in the mineral sector. Adding the usual government counterpart funds, DTCD delivers over $US 0.25 billion, of which about $US 30 million is in the mineral sector. UN/DTCD mineral projects rarely exceed $US 4 million. This is due to the limitation of UNDP funds for which numerous requests compete. In fact, most projects are now in the range of $US 300,000-700,000.

11. Project opportunities come to the attention of UN/DTCD mainly through contacts between UN/DTCD technical and interregional advisors and the mining agencies of governments. Sometimes, a ministry of mines will request UNDP support for a project idea. Often, the mission of a UN/DTCD interregional advisor will lead to a project proposal.

II. UNITED NATIONS CONFERENCE ON TRADE AND DEVELOPMENT (UNCTAD)

12. Information on UNCTAD's measures/programmes/activities including the Integrated Programme for Commodities (IPC), work related to individual commodities (in particular, nickel), Common Fund, compensatory financing, and processing, marketing and distribution of commodities of export interest to developing countries was provided in document LOS/PCN/SCN.1/WP.5 and Add.1. The following is an update of the above information.[1/]

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Work on individual commodities

13. In the Final Act of UNCTAD VII, paragraph 77, it was agreed that the Secretary-General should convene or resume, in accordance with the result of comprehensive consultations with producers and consumers, intergovernmental meetings on individual commodities which are not covered by international agreements/arrangements and which are included in the indicative list of the IPC.

14. Pursuant to the above orientation, the secretariat organized the United Nations Conference on Copper, 1988, which met from 13 to 22 June 1988 and from 20 to 24 February 1989 and succeeded in negotiating the establishment of an intergovernmental forum or group for copper. The Conference established the terms of reference for an autonomous body, referred to as "The International Copper Study Group". The main functions envisaged for the Group are: consultations and exchange of information; improvement of copper statistics; assessment of the market situation and outlook; and market development, i.e. the promotion of copper consumption.

15. A number of consultations were conducted between consumers and producers on manganese. There was broad agreement among the participants in these consultations that international co-operation, if any, should be in the form of a study group type of arrangement. The secretariat is currently engaged in preparing an informal note to governments of producing countries setting out the various alternative scenarios of study group arrangements previously discussed or negotiated in the case of other metals.

16. As regards nickel, interested governments continue with efforts to put into effect the terms of reference of the International Nickel Study Group negotiated at the United Nations Conference on Nickel held in 1986, and to convene the inaugural meeting of the group.[3]

Compensatory financing

17. The issue of compensatory financing has figured in every session of the Conference and was an essential aspect of the Integrated Programme of Commodities. The Intergovernmental Group of Experts on Compensatory Financing met three times between 1986 and 1989 and reached some substantive conclusions. Its conclusions concern the fact that virtually all developing countries have experienced sizeable shortfalls in their export earnings and that generally there was a significant difference between estimates of the size of the total commodity export earning shortfalls experienced by developing countries and the finance made available under existing compensatory financing facilities; that commodity-related shortfalls have a severe negative impact on economic and social development; and that the problem created by shortfalls was a matter of concern to the international community as a whole.

Diversification, processing and marketing

18. Following the new orientations in this area given by the Conference in the Final Act of UNCTAD VII, the secretariat presented an approach to further intergovernmental work on diversification, processing, marketing and distribution to the 13th session of the Committee on Commodities in December 1988. This resulted in the Committee adopting a new work programme for its

Working Party on Diversification, Processing, Marketing and Distribution. The reports prepared on the three areas agreed on for the second session of the Working Party (September 1989) were used as the basis for discussions. The Working Party adopted unanimously a set of forward looking agreed conclusions covering these three topics. This was the first time in many years of intergovernmental discussions that governments came to a substantive agreement on diversification, processing, marketing and distribution issues in UNCTAD. These conclusions, which are a combination of statements of agreement on problem areas, recommendations for further actions by governments and international organisations and areas for further research, lay the basis for an important programme of work for the future on diversification, processing, marketing and distribution issues. A further session of the Working Party is scheduled for the last quarter of 1990 to complete work on the issues given to it by the Committee on Commodities, and the Working Party will report to the Committee at its 14th session in November 1990.

Impact of sea-bed production

19. Concerning the problems which would be encountered by developing land-based producer States likely to be most seriously affected by the exploitation of minerals derived from the international sea-bed Area, the UNCTAD secretariat is not planning any work directly related to the possible impact of such exploitation. However, UNCTAD could examine this issue if and when it becomes relevant in their studies on individual commodities, notably on copper, nickel, manganese and cobalt. In addition, the UNCTAD secretariat is currently implementing a research/technical assistance project entitled "The role of the mineral sector in the development process of developing countries (project MINDEV)", which aims to assist developing countries in the planning of mineral sector programmes with a view to identifying those policies or instruments which are most likely to advance the integration of the minerals sector into the economy as a whole and thus promote a self-sustaining process of development. Hence, there is a possibility, in the future, to encompass this issue if necessary.

Common Fund

20. The Agreement Establishing the Common Fund for Commodities, adopted in 1980, entered into force in June 1989; as at 20 July 1989, 104 Members of the Common Fund deposited their instruments of ratification, acceptance or approval and in addition, there were 17 signatories to the Agreement.

21. The first meeting of the Governing Council of the Common Fund was held in July 1989. The entry into force of the Common Fund was hailed as an achievement of tremendous significance, especially in light of the changed economic circumstances in the course of the decade of 1980's.

22. The first meeting of the Governing Council decided to establish the Fund's headquarters in Amsterdam. Also, during this meeting the Executive Directors and Alternates were elected, and the Managing Director of the Fund (Mr. Budi Hartantyo (Indonesia)) was appointed. A number of organisational, financial and procedural matters were also attended to. The Fund commenced functioning since the beginning of this year. It is expected to set in place its regulations for the effective and flexible operation of both of its accounts (the First and the Second Accounts).

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23. The functions of the First Account of the Fund are to contribute to the financing of international buffer stocks and internationally co-ordinate national stocks, all within the framework of International Commodity Agreements or Arrangements (ICAs); and the functions of the Second Account of the Fund are to finance, and to promote co-ordination and consultation with regard to measures in the field of commodities other than stocking, and their financing, with a view to providing a commodity focus.

24. Two essential features distinguish the Common Fund: (a) commodities are pooled rather than being considered case-by-case; and (b) the objectives of the Fund go beyond a stabilization of commodity prices and export earnings; they also include improvement of competitiveness of natural products, market access, marketing, distribution and transport systems for commodity exports of developing countries, as well as diversification of production and expansion of processing of primary products in developing countries.

25. The Fund covers a wide range of commodities of export interest to developing countries. Ten commodities - coffee, cocoa, tea, sugar, cotton, jute, hard fibres (sisal), rubber, copper and tin - have been identified as "core" commodities. They share two main features, in that they can be stored at a reasonable cost and they are all of major export interest to developing countries, their share in the total exports of the 10 core commodities being about 72 per cent.

26. The essential rationale that underlines the buffer stocking idea is that commodity markets are subject to violent fluctuations which impose grave difficulties and cause serious disruptions in the economies of the producer countries, especially developing countries. The development efforts of many developing countries are often frustrated because of the frequent aberrations that occur in commodity markets. These fluctuations and disturbances also hurt consumer countries by causing supply uncertainties and increasing inflationary pressures. They could be moderated, or even eliminated altogether, by concerted international action specifically devoted to that end. The objective of the First Account is basically to provide a floor to the downward movement of commodity prices and a ceiling to their upward movement, so that in the end there exists a regime of commodity markets which operate and function with greater smoothness, greater regularity and greater stability. However, stocking schemes which would perform this function are costly, which in the past has prevented the establishment of such schemes on a wide front. The chances of doing so would be immensely enhanced by the existence of a central source of assured finance.

27. Past international efforts to solve the commodity problem have made it evident that a case-by-case approach which attempts to solve only certain problems of a particular commodity tend to be of limited effect as they usually focus sharply on the commercial interest of each country as buyer or seller of a particular product and do not give sufficient consideration to the whole range of problems posed by the commodity issue in the wider context of international development policies and goals. Past experience has shown that it is very difficult to incorporate into commodity agreements the principle of compulsory financial contributions by both producers and consumers. Moreover, stocking schemes would require, if financed through a common fund, less funds in total than if commodity organizations were required to seek financing

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directly from their members or from capital markets. Different commodities have different price cycles, so that in any given period the prices for some commodities would go up, whilst prices for others would go down. There would thus be savings in the funds required through offsetting between requirements for several commodity agreements. Furthermore, a single institution with a representative membership, self-sustaining capitalization and a viable method of operation would be able to mobilize resources in capital markets more effectively and at lower cost through borrowing than could a variety of individual commodity bodies. These advantages of the First Account of the Common Fund would ease the burden of governments in making available finance for buffer stocks.

28. The Common Fund is more than just a pooling instrument for commodity stocks. It is expected to provide a stimulus, serving as an impetus to the successful establishment of individual commodity arrangements. The Common Fund would play this role because by its very existence it would ensure that otherwise desirable solutions for individual commodities would not be frustrated by the lack of finance, and consequently the prospect for concluding arrangements on the other complex aspects of individual commodity problems would be enhanced. That is why the common fund is called a "catalyst". And that is why, also, the establishment of a common financing fund should, in terms of time, be parallel to, if not actually precede, the negotiations on individual commodities rather than take place at the conclusion of a series of individual commodity negotiations. This is important to avoid a vicious circle: no common fund because there are no commodity agreements and no commodity agreements because there is no common fund. By the establishment of the common financing fund the prospects for the successful conclusion of individual commodity agreements would be immensely enhanced.

29. The Second Account of the Fund rests on the assumption that commodity agreements will depend for their effectiveness on a package of measures, applied in a multi-dimensional approach, to stabilize and improve commodity trade. In the case of commodities threatened by competition from synthetics or subject to over-production, countries should be helped to make the natural product more competitive vis-à-vis the competing synthetic and/or diversify their production.

30. The separation of the Fund's operation and resources into two accounts is based on the consideration that loans for stocking would be essentially short-term and revolving credits, whereas assistance in restructuring of the commodity economy of developing countries would need to be on different terms. It would also give countries so disposed the possibility of utilizing the Second Account as a conduit for channelling special contributions to operations in the commodity field. By separating these accounts, the financial viability of the Funds' major activity - stocking - would be maintained.

31. In the initial period, it is estimated, under certain assumptions, that capital subscriptions and annual income of the Common Fund, would be as follows:

Capital Subscriptions: First year Paid-in Shares		Units of Account 4/
- Least developed countries (35)		8,049,969
- Other countries (69)		47,893,494
	TOTAL	55,943,463
Allocations to Second Account		23,371;317
Allocations to First Account		32,572,146
Estimated Income:		
Assuming 8 per cent on short-term deposits		2,605,772
Equivalents in French francs		14,124,038
Equivalents in US dollars at 6.5 French francs to the US dollar		2,172,929

III. UNITED NATIONS INDUSTRIAL DEVELOPMENT ORGANIZATION (UNIDO) 5/

Assistance in the mineral industries of developing countries

32. Within the framework of the over-all objectives of promoting international co-operation in relation to industrialization on global, regional, national and sectoral levels, and promoting and accelerating industrial development in developing countries, UNIDO's programme covers a wide spectrum of industrial branches which includes mining and metallurgical industries.

33. As the specialized agency responsible for co-ordination of industrial activities within the United Nations system, UNIDO has developed a variety of unique programmes to bring technical assistance, training, information, technology and industrial planning to developing countries. At the same time, it helps to bridge the interests of donors and recipients by promoting industrial co-operation between developed and developing countries.

34. UNIDO's technical assistance projects embrace four main elements: experts to assist and advise; service of consultant firms for work in the establishment of industrial undertakings; fellowships, single or in groups, as a means of developing local expertise; and assistance in the equipment for testing, development and pilot plant facilities. UNIDO maintains Investment Promotion Services (IPS) in Cologne, Paris, Seoul, Tokyo, Vienna, Warsaw, Washington D.C. and Zurich to facilitate contacts between businessmen and governments of the developing countries and from counterparts in industrial and financial centres in the industrialized world.

35. At the pre-investment level UNIDO's Industrial Investment Programme identifies suitable industrial investment projects analyzing factors such as processing of raw materials for added export value, size of local or neighbouring markets and alternative production process. Finding appropriate resources to bring a project to fruition is the main thrust of the programme's services.

36. A vital function of UNIDO is the provision of a clearinghouse for industrial information covering all aspects of industrialization and all available technologies. Training is another important activity of UNIDO. UNIDO assists developing countries to identify and qualify their need for people with various levels of skills, the training requirements this implies and to draw up appropriate policies and organize specialized programmes through group training, fellowships and study tools. UNIDO also conducts a series of in-plant group training programmes for groups of engineers, managers and other senior technical personnel covering virtually every branch of industry that is important to developing countries.

37. In the non-ferrous metal sector, the projects of UNIDO include assistance in developing mineral-based industrial processing operations, e.g., laboratory-scale testing with ores using a new technology for smelting copper ores in a molten bath; heap leaching of copper; bacterial leaching of copper ores; and pilot-scale testing and feasibility study in some cases. UNIDO strengthens and/or establishes centres for metallurgical technology. UNIDO also places emphasis on mineral beneficiation, environmentally sound projects and waste utilization.

38. One of the special programmes of UNIDO consists of the programme on Industrial Development Decade in Africa (IDDA). This programme focusses on the establishment of priority core industries and related industrial manpower and technological capabilities, support institutional machinery and raw materials base. Special emphasis is accorded to increasing awareness for the problems of African industrialization and to the promotion and realization of intra-African industrial co-operation. UNIDO is at present investing its efforts towards the mobilization and effective utilization of both local and external financial resources in the implementation of the IDDA programme.

Restructuring of non-ferrous metals industries

39. The Expert Group Meeting on the Restructuring of Non-ferrous Metals Industries in 1985 (information on which was presented in document LOS/PCN/SCN.1/WP.5) was followed by First Consultation on the Non-ferrous Metals Industry, held in Budapest, Hungary, during 13 November-4 December 1987, and a Regional Expert Group Meeting on the Development of the Non-ferrous Metals Industry in Latin America and Possibility for Complementarity, held in Cordoba, Argentina during 27-30 March 1989.

40. In light of the changed economic conditions and depressed metals market during the first period of the 1980's, the conclusions of these meetings were less optimistic, as regards prospects for mineral processing in developing countries, than in previous cases. Some of the conclusions are as follows: (a) If financing problems can be resolved, the establishment of mineral-processing facilities in the larger developing countries can be justified, and may contribute to the retention of a larger share of the value of mineral production in the producing countries. For many smaller countries, however, the economics of mineral processing and semi-fabrication are, at best, questionable, and many of these countries will face a choice between remaining exporters of unprocessed raw materials or participating in regional processing initiatives, if these exist. (b) While tariffs and other barriers to developing countries' processed minerals and metals imposed by the industrialized countries have diminished in importance in the past decades,

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these barriers still exert a certain bias against the Third World's products. In addition, the recent strategy of transnational corporations in the minerals industries, to diversify their sources of raw materials supply and to concentrate their processing and fabricating operations in what they consider to be politically "safe" countries has had the effect of depriving developing countries of an important potential source of capital for processing operations. On the other hand, the developing countries often possess locational advantages, especially in the form of low-cost labour and energy, in some cases. (c) Appropriate government strategies depend on the situation of the particular country in question; it does not usually make sense for all countries to proceed to mineral processing merely because their mine production capacity exceeds some theoretical minimum efficient level. The most important general aspect of developing countries' strategy in this area is that the strategy must suit a country's level of economic development. (d) Opportunities for co-operation among developing countries are particularly promising in the minerals processing field. Many regions encompass some countries with low-cost mineral resources, others with low-cost energy, and still others with well-developed industrial bases and sizeable markets; in such situations, the prospects for co-operative processing projects are good. Difficulties have repeatedly arisen, however, in bringing such co-operative projects to fruition. Nevertheless, promotion of such regional co-operation is an area in which United Nations agencies with appropriate expertise, including UNIDO and the United Nations Department of Technical Co-operation for Development, might play a particularly important catalytic role.

Notes

1/ The following paragraphs have been abstracted from information furnished by UN/DTCD and from documents provided by it.

2/ The following paragraphs have been abstracted from information furnished by UNCTAD and from documents provided by it.

3/ For information on the International Nickel Study Group, see document LOS/PCN/SCN.1/WP.5/Add.1.

4/ For the definition of one Unit of Account, see document LOS/PCN/SCN.1/WP.5, footnote 8.

5/ The following paragraphs have been abstracted from information furnished by UNIDO and from documents provided by it.

LOS/PCN/SCN.1/WP.6
27 February 1986

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PREPARATORY COMMISSION FOR THE
INTERNATIONAL SEA-BED AUTHORITY
AND FOR THE INTERNATIONAL TRIBUNAL
FOR THE LAW OF THE SEA
Special Commission 1.

FACTORS THAT MAY BE OF RELEVANCE IN EXAMINING THE DEPENDENCE OF PARTICULAR DEVELOPING LAND-BASED PRODUCER STATES ON THE COPPER, NICKEL, COBALT AND MANGANESE SECTORS

Preliminary paper by the Secretariat

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I. INTRODUCTION

1. In conformity with articles 150 (h) and 151 (10) of the United Nations Convention on the Law of the Sea, Special Commission 1 agreed that developing land-based producer States likely to be most seriously affected by the production of minerals derived from the international sea-bed Area are those which are likely to suffer the most serious adverse effects on their export earnings or economies. It has also been agreed that developing land-based producer States which are dependent, to a large extent, on one or more of the four minerals concerned - copper, nickel, cobalt and manganese - for their export earnings or for their economies prior to sea-bed production, are the ones likely to suffer the most serious adverse effects. The Special Commission made intensive efforts in formulating quantifiable yardsticks that may be used to portray such dependence. These yardsticks concentrate on the value of export earnings from the minerals concerned in absolute terms or relative to other variables, e.g., total export earnings, or on the income from these minerals in absolute terms or relative to other variables, e.g., total national income. It was recognized, however, that there was a need to examine certain factors which may render particular land-based developing States likely to suffer serious effects on their export earnings or their economies.

2. These factors may have an influence on the degree of dependence of particular developing land-based producer States on the minerals concerned and consequently, on the degree of vulnerability of these States to the supply of the minerals from the sea-bed. They may also be significant in determining the capabilities of these States to counter or control the possible adverse effects. A number of such factors have been discussed in the Special Commission, out of which four have been mentioned specifically by the Chairman of the Special Commission - per capita income, population, size of the area, and geographical location - when, through the Preparatory Commission, he requested the Secretariat to initiate a study on the influence of such factors (document LOS/PCN/L.23, para. 10). The present paper has been prepared pursuant to this request.

3. Before discussing the influence of these factors, it will be useful to distinguish three types of exercise in relation to which the influence of these factors can be examined, and the respective objectives of those exercises. One type of exercise can be carried out by the Special Commission in connection with its studies on the problems which would be encountered by developing land-based producer States likely to be most seriously affected by sea-bed production. This exercise will be of a general nature, and its objective will be to examine the influence of these factors in relation to the problems which would be encountered by such States so that the Special Commission can study measures to minimize their difficulties and to help them to make the necessary economic adjustment. A second type of exercise can only be carried out by the Authority when a State Party or States Parties bring to the attention of the Economic Planning Commission any situation likely to lead to adverse effects on their export earnings or economies. This exercise would

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be of a more specific nature, and its objective would be for the Authority to be in a state of preparedness in case the adverse effects do actually occur and the Authority is required to take remedial measures, and for the State Party or States Parties concerned to carry out preparatory work so that they are better equipped to counter or control possible adverse effects. The third type of exercise would also be carried out by the Authority only. The objective of this type of exercise would be to determine whether and to what extent the Authority would implement any necessary remedial measure for an actually affected State Party or States Parties. The second and the third types of exercise would be carried out on a case-by-case basis. The case of each individual State with respect to each individual mineral would be studied. The influence of relevant factors could, then, be examined in specific and concrete terms.

4. Keeping this crucial distinction in mind, the present paper will first discuss the possible influence of the factors concerned in general terms, and then suggest some ways in which the Special Commission may wish to address the matter. Methodologically, the analysis of the influence of the factors concerned will be carried out assuming the other things remain the same. It should be noted, however, that an analysis in general terms carried out in an abstract framework has serious limitations; ultimately, a case-by-case analysis in specific and concrete terms would be required to examine the influence of the factors concerned.

II. FACTORS THAT MAY BE OF RELEVANCE IN EXAMINING THE DEPENDENCE OF PARTICULAR DEVELOPING LAND-BASED PRODUCER STATES ON THE MINERAL SECTORS CONCERNED

Per capita income

5. Per capita income is essentially a measure of economic development, assuming that the structure of the economy is well-balanced. (An economy may have a skewed structure and still have a relatively high per capita income. In recent years, a number of oil-producing and oil-exporting countries have witnessed high per capita income on the basis of income from the oil sector; the economies of these countries, however, have not been structured in such a fashion as to possess advanced secondary and tertiary sectors.) Low per capita income, therefore, implies that in the economy there do not exist many sectors, relative to the population, where high value added can be accrued. The dependence on the existing mining sectors becomes significant in this context.

6. Low per capita income also means that the economy is vulnerable to a fall in income for two reasons, basically. It is commonly held that the utility of an extra dollar diminishes as income rises. If income is at a low level, the marginal dollars have high utility. Loss of the marginal dollars may even mean forgoing basic necessities of human life. The other reason is that the absorption capacity of other private sectors is low and public sector revenues are also scanty. The loss of income in the mining sector cannot be counterbalanced easily.

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7. Low per capita income is usually associated with low or no domestic savings and therefore lack of investible funds. Investment opportunities in the economy may also be scarce. Thus, the capabilities of the economy to restructure the mining sector or to diversify are extremely limited; in some cases, even if restructuring is possible, the economy's capacity to withstand the transitional costs mav be limited.

8. On the other hand, given the current trends with regard to bilateral or multilateral assistance, the relative level of assistance to countries with low per capita income or the least developed countries prior to sea-bed production may be higher than in the case of developing countries with higher per capita income.

Population

9. Developing countries with small population may face a unique situation where the existing mining sector accounts for a relatively large proportion of total employment. The economic and social infrastructure of the whole population may have a higher dependence on the infrastructure provided by the mining sector. Loss of income in the mining sector may cause a relatively high decrease in overall per capita income, savings, investible funds and government revenues as well as a relatively high rate of deterioration of infrastructure.

10. Developing countries with large population may encounter certain problems too. They usually tend to have a large number of unemployed people. Other things remaining the same, the economy is dependent on the mining sector for the absorption of part of the labour force. If the mining sector lays off workers, the increase in the absolute number of unemployed people may cause strain in the economy. It should be noted, however, that there is also a possibility that a large population may create an indigenous demand for the minerals at a scale large enough to counter some of the loss of the external market.

11. What may be relevant is the characteristic of the labour force employed in the existing mining sectors. If the labour force is of the unskilled category, it may be easier to absorb them in other sectors of the economy. On the other hand, if the mining labour force possesses skills applicable in the mining sectors alone and if they are traditionally bound to the mining sectors, diversion of such a labour force to other sectors may be quite difficult.

Size of the area

12. Other things remaining the same, small-sized developing countries tend to have relatively few natural resources which can be exploited for the socio-economic well-being of the populace. Search for resources in a small-sized country is relatively less expensive and it is possible that such a search has already been made while in a large country, there still may be areas where a resource-search has not been carried out. Furthermore, as in

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the case of countries with small population, the existing mining sector may account for a large proportion of economic and social infrastructure of the small-sized countries. It is also conceivable that in a small-sized country, the land-space required for housing and socio-economic infrastructure as well as for the existing mining industries may leave relatively little land-space for new economic uses.

Geographical location

13. The geographical location of the mining operations as well as the geographical location of a developing country itself can be considered. The location of mining operations in remote, relatively inaccessible and mountainous/desert areas can add to the costs of infrastructure, and in some cases, to capital and operating costs. The mining sector may have to bear the transportation costs of machinery, raw materials and labour as well as marketable products, and still be competitive in pricing in the world mineral market. Other things remaining the same, these mining operations tend to be in the high-cost segment of the supply schedule, and are vulnerable to any new economic source of supply.

14. The geographical location of a developing land-based producer State away from sea port may necessitate the mining industry to cover transportation cost to the sea port in the unit price of the mineral f.o.b. (free on board) in the sea port from which the mineral is shipped. This transport cost may place the developing State concerned in the high-cost segment of the supply schedule. The relationship of land-locked producer States with States through which the mineral is transported for being shipped from the sea port as well as with States where the sea ports lie can have important bearing on the matter.

Other factors

15. In the deliberations of the Special Commission, mention was made of a few other factors in the present context. It was mentioned that because of the uncertainties regarding the timing of sea-bed production it may so happen that a particular developing country would be building up larger production capacity in order to be in a position to meet increasing demand in the future and then, with a short notice, would be confronted with the possibility of sea-bed production. Under these circumstances, the larger the production capacities, the higher the degree of dependence and vulnerability of the particular developing land-based producer State. In the same vein, prior to sea-bed production, the bigger the programme of capacity expansion and new mine development in the mineral sectors concerned in a particular developing land-based producer State, the higher its dependence on these mineral sectors and the higher its vulnerability to sea-bed production. Similarly, it has been argued that prior to sea-bed production, the greater the extent of excess capacity in the mining sectors concerned the higher the dependence and vulnerability of the particular developing land-based producer States in question. Finally, it was also pointed out the developing land-based producer States with larger amounts of high-grade reserves would be in a more dependent and vulnerable position.

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General observations

16. It can be seen from the above that with an abstract and general approach it may be rather difficult to conclude definitely in which direction or in what way factors such as per capita income, population, size of the area, geographical location, etc., would influence the dependence and vulnerability of particular developing land-based producer States. A case-by-case analysis in specific and concrete terms would minimize these difficulties, and it is expected that with the help of requisite data and analytical methods the Authority would be in a position to carry out such analysis in due time.

III. SUGGESTED WAYS THE SPECIAL COMMISSION CAN DEAL WITH THE MATTER

17. It has been pointed out earlier that in the future the Authority would be in a position to examine more fruitfully the influence of the above factors either in connection with its studies of the problems of developing land-based producer States, as requested, or in connection with the implementation of any remedial measure, as necessary. The Special Commission, however, pursuant to its mandate, is examining the influence of these factors in connection with its studies on the problems which would be encountered by developing land-based producer States likely to be most seriously affected by future sea-bed production, undertaken with a view to minimizing their difficulties and helping them to make the necessary economic adjustment. It is also carrying out the exercise to determine if any recommendations on this matter can be submitted to the Authority.

18. Keeping in mind the fact that it would be more effective to examine the influence of these factors on a case-by-case basis in specific and concrete terms at a time close to when sea-bed production will occur in the future, the Special Commission at this time may wish to deal with the matter in several ways. First, it may wish to consider if any further studies in general terms would be useful. In order to facilitate the work of the Special Commission, some data on the total value of exports of copper, nickel, cobalt and manganese from 42 developing countries/territories, their per capita income, population and area size as well as data on distance from sea port in the case of land-locked developing producer States have been presented in table 1.

19. Secondly, on the basis of deliberations carried out in connection with the present preliminary study the Special Commission may feel that it is in a position to draw up, on a preliminary basis, a recommendation to be submitted to the Authority. In this context, it can adopt a general or specific approach. Under the general approach, a recommendation can be drafted to the effect that the Authority in connection with its studies on the problems of developing land-based producer States and/or in connection with the implementation of any remedial measures, should take into account the influence of factors X, Y or Z.

20. It should be noted that there is a significant distinction between the functions of the Authority in connection with studying the problems of developing land-based producer States likely to be most seriously affected by sea-bed production and those in connection with the implementation of any remedial measure. With regard to the former, the Authority is mandated to initiate studies on request from a State Party or States Parties who feel that they may be affected. It is expected that once the States feel that they may be affected they will submit to the Authority their case with sufficient substantiation. However, in order to assist developing States, the Special Commission may wish to recommend to the Authority that it provides certain guidelines to developing States for the purpose of submitting their case. In case the Special Commission decides to do so, it may also wish to recommend to the Authority the necessary guidelines along with the elements of substantiating evidence that would be submitted by developing States to the Authority. The functions of the Authority in connection with the implementation of any remedial measures will involve determining the applicability of remedial measures in particular cases, and the nature and extent of assistance to be provided in each case.

21. If it is so decided by the Special Commission that specific recommendations will be made to the Authority, the Special Commission may submit concrete formulations in this connection. One of the necessary elements of concrete formulations is the quantification of the influences of the above factors. In some cases, quantification in direct terms may be impossible; some indirect indicators may have to be used. For example, an indirect measure characterizing the disadvantaged geographical location of a developing land-based producer State may be the distance of the nearest sea port from the mining operation. Assuming that the Special Commission will concentrate on per capita income, population, size of the area, geographical location, excess capacity in the mineral sectors concerned and reserves of the minerals, the units for the purpose of quantification can be as follows:

Factor	Unit of quantification
Per capita income	Current or constant $US
Population	Number in millions
Size of the area	Square kilometres in thousand
Geographical location	Distance from the nearest sea port in kilometres
Excess capacity in the minerals concerned	Per cent of full capacity
Reserves of the minerals concerned	Amount in million metric tons.

22. In studying the problems of developing land-based producer States likely to be most seriously affected by sea-bed production the Special Commission

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discussed a methodology that would allow characterizing those developing land-based producer States which exceed a specified "threshold level" of a given quantifiable yardstick, prior to sea-bed production, as the ones likely to be most seriously affected by sea-bed production. If the Special Commission ultimately decides on such a methodology, one way of taking account of the influence of the above factors is to vary the threshold levels in accordance with each factor. To give an illustrative example, if it is decided that the threshold level of the percentage of total exports of developing land-based producer States accounted for by the exports of one or more of the four minerals concerned, prior to sea-bed production, is X per cent, the Special Commission may wish to decide that in the case of a developing State with low per capita income (say, less than Y dollars), the threshold level would be less than X per cent. Another way would be to assign weights to each of the factors and calculate the total weights assignable to each individual developing land-based developing State. If the total weights exceed a specified threshold level in the case of a particular developing land-based producer State, then that State would be considered likely to be most seriously affected by sea-bed production. This is a more comprehensive method but difficult to implement in view of the problems of assigning weights. The Special Commission may wish to explore whether specified weights can be agreed upon. In this connection the attention of the Special Commission is drawn to the analysis contained in document LOS/PCN/SCN.1/WP.3.

23. In the specific approach, the Special Commission may wish to carry out a similar exercise in relation to the so-called "trigger levels" of certain quantifiable yardsticks. It may be recalled that the Special Commission discussed such trigger levels in connection with formulating guidelines for the Authority while implementing any remedial measure. To give an illustrative example, the Special Commission may decide to recommend to the Authority that the latter should implement remedial measures if there is an X per cent decrease in export earnings of a particular developing land-based producer State resulting from a reduction in the price of an affected mineral or in the volume of exports of that mineral, to the extent that such reduction is caused by activities in the Area. This X per cent is called the trigger level because it triggers off action on the part of the Authority. Again, one way of taking account of the influence of the above factors would be to vary the trigger levels in accordance with each factor. For example, the trigger level can be specified at a level less than X per cent in the case of a particular developing land-based producer State with low per capita income (say, less than Y dollars). The rationale is that a 1 per cent reduction in export earnings may not have the same impact for different developing States. A developing State with a per capita income of $500 may experience more severe repercussions than one with a per capita income of $2,000, other things remaining the same. At the same time, the former State may also be in a worse position to withstand the repercussions as compared to the latter.

24. It can be seen from the above that the Special Commission can deal with the matter at hand in several possible ways. Once it is agreed that the influence of certain factors is relevant, then the Special Commission may choose to submit a recommendation to the Authority of a general or a specific nature. If a recommendation of a specific nature is deemed preferable, then further deliberations are necessary in order to determine the specific elements of such a recommendation.

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Table 1

Total exports of copper, nickel, cobalt and manganese, per capita gross domestic product/net material product, population, surface area and distance from sea port of developing land-based producer States/territories*

Country/ territory	Total exports of 4 minerals	Per capita GDP/NMP 1981	Population Mid-1983 estimate	Surface area	Distance from sea port
	(000 $US)	($US) a/	(000 000) b/	(000 km^2) c/	(km)
Algeria	2 720	2 260	20.5	2 382	
Argentina	832	4 315	29.6	2 767	
Bolivia	4 902	1 175	6.1	1 099	1 480 average d/
Botswana	-	945	1.0	600	1 400 Rail
Brazil	72 226	2 220	129.7	8 512	
Burma	347	165	37.6	677	
Chile	1 680 659	2 925	11.7	757	
Congo	10 702	1 270	1.7	342	
Cuba	268 016	1 565	9.9	111	
Cyprus	2 896	3 200	0.7	9	
Dominican Republic	97	1 295	6.0	69	
Ecuador	1 232	1 605	9.3	284	
Egypt	-	670	44.5	1 001	
Gabon	108 381	3 435	1.1	268	
Ghana	20 307	620	12.7	239	
Guatemala	58 050	1 150	7.9	109	
India	33 491	245	732.3	3 288	
Indonesia	191 501	555	159.4	1 905	
Iran (Islamic Rep. of)	12 391	2 380	41.6	1 648	
Kenya	53	385	18.8	583	
Korea, Rep. of	17 651	1 670	40.0	98	
Malaysia	55 371	1 715	14.9	330	
Mauritania	5 616	485	1.8	1 031	
Mexico	137 121	3 365	75.1	1 973	
Morocco	25 715	715	22.1	447	
Mozambique	220	n.a.	13.3	802	
Namibia	-	n.a.	1.5	824	
New Caledonia	137 616	6 960	0.1	19	
Nicaragua	41	895	3.1	130	
Pakistan	62	390	89.7	804	
Papua New Guinea	408 644	825	3.2	462	

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Table 1 (continued)

Country/ territory	Total exports of 4 minerals	Per capita GDP/NMP 1981	Population Mid-1983 estimate	Surface area	Distance from sea port
	(000 $US)	($US) a/	(000 000) b/	(000 km^2) c/	(km)
Peru	555 633	1 265	18.7	1 285	
Philippines	582 230	780	52.0	300	
Sudan	-	465	20.4	2 506	
Thailand	7 674	760	49.5	514	
Turkey	367	1 270	47.3	781	
Uganda	5 632	n.a.	14.6	236	1 450 Rail and Road
Vanuatu	513	n.a.	0.1	15	
Venezuela	930	4 645	16.4	912	
Zaire	715 320	185	31.2	2 345	
Zambia	977 822	600	6.2	753	(2 570 Rail (2 000 Road
Zimbabwe	138 076	870	7.7	391	n.a.

Sources: Total exports of 4 minerals - Document LOS/PCN/SCN.1/WP.2/Add.1, Table B.II.2.2. Per capita GDP/NMP - United Nations, National Accounts Statistics: Analysis of Main Aggregates, 1982, United Nations, New York, 1985 (United Nations publication Sales No. E.85.XVII.4), Table 1. Population and surface area - United Nations, 1982 Statistical Yearbook, United Nations, New York, 1985 (United Nations publication Sales No. E/F.84.XVII.1), Table 19. Distance from sea port - A. Mpaji Sinjela, Land-Locked States and the UNCLOS Régime, Oceana Publications, London, 1983, Appendix I.

General note: For details about the figures in the table please consult the sources of data.

- Indicates negligible exports or unavailability of data on exports.

a/ For the sake of convenience, the figures given in the source of data have been rounded to the nearest unit of 5.

b/ Figures given in the source of data have been converted to millions and rounded to one decimal figure.

c/ Figures given in the source of data have been converted to thousands and rounded accordingly.

d/ Average distances to various sea ports by rail or rail and water.

LOS/PCN/SCN.1/WP.7
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PREPARATORY COMMISSION FOR THE INTERNATIONAL
SEA-BED AUTHORITY AND FOR THE INTERNATIONAL
TRIBUNAL FOR THE LAW OF THE SEA
Special Commission 1

IDENTIFICATION OF POSSIBLE EFFECTS OF A DECLINE IN EXPORT OR PRODUCTION OF COPPER, NICKEL, COBALT AND MANGANESE ON DEVELOPING LAND-BASED PRODUCER STATES

Preliminary paper by the Secretariat

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I. INTRODUCTION

1. At the conclusion of the 1985 Geneva Meeting of the Preparatory Commission, Special Commission 1 requested the Secretariat to initiate a study on the possible effects of a decline in export or production of one or more of the four minerals with which the Special Commission is concerned at this time - copper, nickel, cobalt and manganese - on developing land-based producer States. The Special Commission also provided guidelines that in undertaking such a study the role of the mineral sectors concerned in the economies of developing land-based producer States and the contribution of these mineral sectors to their economies should be taken into account. As an initial step, the present paper attempts to identify the possible effects of various types in a systematic manner. It should be recalled that the Special Commission is mandated to study the problems which would be encountered by developing land-based producer States likely to suffer serious adverse effects on their export earnings or economies resulting from a reduction in the price of an affected mineral or in the volume of exports of that mineral, to the extent that such reduction is caused by activities in the Area. This paper does not deal with whether or not a decline in export or production is caused by activities in the Area; it is assumed that the Special Commission, in due course, will address the issue of determining to what extent a reduction is caused by activities in the Area.

2. In conformity with articles 150 (h) and 151 (10) of the Convention, the paper deals with a reduction in export earnings or in value of production. Although the paper starts with a reduction in export earnings it is assumed that such a reduction will eventually cause a decline in production. Therefore, after a certain stage the identification of the effects will be similar for both cases. It should be pointed out that the analysis in this paper is necessarily of a general nature; the limitations of this type of analysis as compared to a specific case-by-case analysis should be borne in mind.

II. SYSTEMATIC IDENTIFICATION OF THE POSSIBLE EFFECTS OF A DECLINE IN EXPORT EARNINGS OR IN VALUE OF PRODUCTION OF THE MINERALS CONCERNED

Effects at the first level

3. In identifying the effects, first of all, it is important to pinpoint all the effects in a distinct manner, avoiding the risks of double-counting. The Gross National Product (GNP) of a country is composed of the value of goods and services for private consumption, investment, government use as well as the value of exports minus the value of imports. With a decline in export earnings of a given amount there is, by definition, a decline in the GNP of the same amount. It is often argued that with a decline in export earnings there is also a decline in government revenues and investment. However, if the earnings of a mining sector is from exports alone, it can be seen that, conceptually, the decline in government revenues and investment is a part of the decline in export earnings rather than additional to the latter. A portion of the earnings from exports is usually paid to the government as, say, export tax and income tax, and also as import duties on goods and machinery used in the mining sector. Again, out of the export earnings a portion is usually earmarked for savings which in turn is invested. A decrease in export earnings is then divided into three parts: a decrease in export earnings net of government revenues and investment, a decrease in government revenues and a decrease in investment. It is important to bear in mind these component parts; however, the repercussion of the decreases in the various component parts may be quite different. For example, a decrease in government revenues may have a relatively higher impact on certain sectors of the economy, e.g., education, housing, health, etc., while a decrease in investment may have a relatively higher impact on consumer goods sectors.

4. Similarly, double-counting needs to be avoided when it is mentioned that with a loss of export earnings there is also a loss of imports. When there is a loss, say, of $1 million in exports, a developing country as a seller loses $1 million in export earnings; the counterpart is that the developing country as a buyer loses the purchasing power for $1 million worth of imports. The loss to the developing country remains at $1 million. However, the social valuation of exports and imports may differ from the market value.

5. A similar reasoning applies at a broader level - a loss of foreign exchange and the associated balance-of-payments problems are often mentioned together. Balance-of-payments effects are already captured in the loss of foreign exchange. However, it can be argued that repercussions of balance-of-payments problems can be wider than those of a mere loss of export earnings. For example, as a result of balance-of-payments problems the country's capabilities to import necessities or to service foreign debts can be impaired. Again, in order to avoid double-counting, one should attempt, at least at a conceptual level, to distinguish between the loss of export earnings *per se* and the additional effects flowing from balance-of-payments problems if any.

6. While the above paragraphs address the issue of identification of effects on the various components of the GNP (the so-called composition of final demand on the output side), an alternative way of viewing a reduction in export earnings is to examine systematically in terms of the input structure. Export earnings are the value of exports of one or more of the four minerals concerned. The value of

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exports is composed of the value of raw materials utilized in producing the exports, the contribution of labour and the contribution of mine owners/developers/operators. One important point can be mentioned at the outset. Raw materials utilized in producing the exports may have an import content; some of the labour engaged in the mining sector may be of foreign origin, and thus part of their contribution may be repatriated; similarly, mine owners/developers/operators may be composed of nationals and non-nationals of the developing country concerned, and part of the contribution of the non-nationals may also be repatriated. The value of exports, thus, may contain the value of imported goods and services, on the current account, and imported capital on the capital account, to a certain extent. There is, therefore, an important distinction between export earnings per se and export earnings net of import components. In any case, from the developing country's point of view, with a loss of export earnings, there is a loss of the value of domestic raw materials, the income of local labour, the income of domestic mine owners/developers/operators (rent, interest on borrowed capital, profit), and the unrepatriated income of the foreign mine owners/developers/operators.

7. In this context, a loss of export earnings and the associated loss of employment are quite often mentioned together. Conceptually, it should be clear that the loss of employment is captured by that part of loss of export earnings which accounts for the loss of income of local labour. One should be cautious so that double-counting of effects are avoided. However, it can be argued that loss of employment has wider implications than the loss of income of labour itself. For example, there may be labour unrest which in turn may lead to social and political repercussions. In some cases the rehabilitation of mining labour force may involve economic and social costs. In order to avoid double-counting one has to make a distinction, albeit at a conceptual level, between the loss of income per se and the additional repercussions in connection with loss of employment.

8. For the sake of convenience, the above effects of a decline in export earnings and, by implication, a decline in production of one or more of the four minerals concerned can be referred to as the effects at the first level. In summary, these effects are:

on the output side

(i) decrease in export earnings net of government revenues and investment paid out of export earnings;

(ii) decrease in government revenues from export earnings;

(iii) decrease in savings/investment from export earnings;

(iv) differential in impacts of (i), (ii) and (iii) above;

(v) differential in social valuation of imports purchased by export earnings, if any; and

(vi) effects flowing from balance-of-payments problems, additional to those in (iv) and (v), if any;

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on the input side

(i) decrease in the earnings of domestic raw materials;

(ii) decrease in the income of local labour;

(iii) decrease in the income of domestic mine owners/developers/operators (rent, interest and profit);

(iv) decrease in the unrepatriated income of foreign owners/developers/operators; and

(v) effects flowing from unemployment, additional to those in (ii) above, if any.

Side effects

9. Special Commission 1 in its deliberations went beyond the effects at the first level. Mention was made of loss of income in connection with accessory minerals. This means that some of the minerals which the Special Commission is concerned with at this moment - copper, nickel, cobalt and manganese - have in some cases joint products (for example, in many mining operations, copper may be produced along with gold); if the production of one or more of the four minerals is reduced there may be a decline in the production of the joint products also. For the sake of convenience this type of effects may be referred to as side effects.

Effects through linkages of the mining sectors with other sectors: Multiplier analysis

10. Beyond the effects at the first level and the side effects, the Special Commission also discussed a number of effects which on various occasions have been called indirect effects, secondary effects or multiplier effects. Whatever term one uses to describe them, it is necessary to make a systematic identification of these effects. These effects may occur as a result of the linkages the mining sectors concerned have with the other sectors of the economy. First of all, the mining sector consumes raw materials from other sectors. As the initial reduction in export earnings leads to a reduction in production, the mining sector's purchases of these raw materials from the various sectors would also be reduced. It should be mentioned here in parentheses that there may be cases when some developing land-based producer States would sell a larger volume of exports to offset the fall in price in order that the total export earnings remain more or less the same. This possibility has been mentioned in document LOS/PCN/SCN.1/WP.4. While the Convention deals with reduction in export earnings it should be borne in mind that there may not be any observable reduction in export earnings because of the offsetting increase in volume consequent to the fall in price. What this means is that although the level of utilization of domestic primary and secondary inputs may remain the same, or increase, the payments to these inputs per unit are less.

11. With regard to the purchases of the mining sector from other sectors and from itself, an illustrative example can be given from the seminal work entitled "Input-Output Economics" by Wassily Leontieff (Oxford University Press, New York, 1966). The "primary metals" sector in an advanced economy, for every billion

dollars of its own output, consumes $10 million worth of chemicals, $50 million worth of petroleum and coal products, $10 million worth of stone, clay and glass products, $20 million worth of energy, $30 million worth of rail transportation services, $60 million worth of scrap and miscellaneous industry products, etc. This sector also consumes $370 million worth of its own products as inputs per $1 billion of its output. It is also interesting to note that this sector uses imports to the extent of $30 million, per $1 billion of its output.

12. In connection with the reduction of purchases of the mining sector from other sectors, one can proceed further. These latter sectors, in turn, consume raw materials from other sectors; a reduction in production of these latter sectors thus will lead to a reduction in production of the sectors from which they consume raw materials. This process will go on and on in various rounds.

13. So far, the analysis concentrated on the outputs of other sectors utilized as inputs in order to produce one unit of output in the mineral sector concerned. The other part of the matter relates to the loss of income of the primary inputs (labour, mine owner/developer/operator) resulting from the loss of export earnings or value of production. With less income the labourers and the mine owners/ developers/operators will also spend less on items they usually consume. The consumer goods and services sectors utilize inputs from other sectors. The decrease in the output of the consumer goods and services sectors resulting from the decrease in income of the primary inputs of the mining sectors will, in turn, reduce the outputs of the sectors from which the former obtain their inputs. A similar process as in the case of raw materials for the mining sector will also work through various rounds in relation to the consumer goods and services sectors.

14. When the whole process works through the various rounds both in relation to the raw materials and the consumer goods and services, the totality of the effects is usually referred to as the multiplier effects. The essential fact that emerges from the above analysis is that a loss of $1 million of export earnings or of value of production in the mining sector concerned can ultimately lead to a loss in the whole economy higher than the initial $1 million - the initial loss is multiplied by a factor to arrive at the ultimate loss; hence the use of the term multiplier.

15. The basic approach in this type of analysis is that each sector in the economy to produce its output uses the products of other sectors as inputs. This input-output or inter-sectoral or inter-industry relationship can only be obtained from empirical data regarding each sector of the economy. These relationships are usually presented in the well-known input-output or inter-industry tables or matrixes. They are called matrixes because they are formed by rows and columns - each row represents one sector in the economy and gives information about how the output of that sector is used as inputs in other sectors; each column also represents one sector in the economy and gives information on what amount of inputs that sector consumes from other sectors.

16. So far, the analysis has been carried out in terms of gross outputs of various sectors. Since each sector uses inputs from other sectors, from the value of the output of that sector the costs of the inputs of the other sectors need to be

deducted in order to arrive at the net output of that sector. Otherwise, there will be multiple counting of the same inputs. This net output is also referred to as value added by that sector. Economists are usually concerned about the multiplier effects on the net outputs or value added than on the gross outputs because in the ultimate analysis, it is the additional value that is gained when there is an additional unit of mineral production or it is the additional value that is lost when there is a loss of one unit of mineral production.

17. A somewhat generalized version of the multiplier analysis can be carried out in an alternative way - by examining the output side in terms of the components of the GNP. The GNP of a country, as has been mentioned earlier, is composed of the value of goods and services for private consumption, investment and government use as well as the value of exports minus the value of imports. An initial reduction in any of these components by one unit will lead to an ultimate reduction of more than one unit in the GNP, as the initial reduction works through the whole system of relationships among the components of the GNP and the GNP itself. The usual multiplier analysis is carried out in this generalized version.

Effects through linkages of the mining sectors with other sectors: Other effects

18. Finally, another set of effects have been mentioned during the discussion by the Special Commission. Once the production in the mineral sector is reduced there may be adverse effects on the economic and social infrastructure supporting the mineral sector. In case a developing country is pursuing a "resource-based industrialization" policy the mineral sector may occupy a significant position in the economy - it is viewed as a nucleus for economic development through provision of raw materials, capital, training, etc., for the creation of linkages to consumer goods, investment goods and service industries; it is also viewed as a major earner of foreign exchange that is utilized for imported raw material and equipment which will form the basis for the growth of the economy. Any adverse effects in the mineral sector, thus, may have impacts on the strategy for growth. The mineral sector may also have heavy indebtedness to finance sectors, domestic and external. The domestic and foreign capital market may, thus, encounter problems if the mineral sector is adversely affected. However, most of these effects may have already been captured in those discussed previously; it needs to be carefully examined whether these effects are different from the latter.

III. NEEDS FOR INFORMATION AND DATA

19. While the above analysis concentrated on the identification of the effects, one crucial issue facing the Special Commission is how to measure them. It has been argued that for the purpose of minimizing the difficulties of developing land-based producer States and helping them to make the necessary economic adjustment what is required is some kind of measurement of these effects. A number of delegations, for the sake of precision, would prefer quantifiable measures. Some delegations, however, pointed out that due to the very nature of some of the effects, quantification is not possible, and some kind of qualitative measure may serve the purpose of the Special Commission.

20. What is evident from the above is that to measure the effects - quantitatively, qualitatively, or both - an immense amount of information and data are required. Information and data on various aspects need to be collected and analysed: (i) the breakdown of a loss of one unit of export earnings or of value of production into its various components both on the output side and the input side; (ii) the extent of joint production of other minerals in the mineral sectors concerned; (iii) input-output or inter-industry relationships between the mineral sectors concerned and all other sectors - the more disaggregative the data on these relationships the more precision that can be expected from the analysis of the data (in this connection, it should be pointed out that the copper, nickel, cobalt and manganese sectors need to be viewed in a disaggregated manner, rather than lumped together in the "primary metals" sector or the "non-ferrous metals" sector); (iv) other socio-economic and political factors the effects on which have not been captured by (i), (ii) and (iii) above and are distinguishable, at least at a conceptual level, from the above effects.

21. The attention of the Special Commission is being drawn to these information and data needs. It should be added that it is inevitable that the nature of the information and data will change over time. It would be much more fruitful to collect and analyse the information and data at a time close to when sea-bed production occurs in the future. An elaborate data collection and analysis exercise at this time would yield findings which may have very little usefulness essentially because of the future changes in the structure of the economy of a particular developing land-based producer State. However, in view of the fact that a large amount of specifically focused data need to be collected, the process may be a lengthy one and it may be worthwhile to initiate the process at this time.

22. Under these circumstances, the Special Commission may wish to consider several possibilities:

(i) It can finalize the identification of the various effects and deliberate on how to measure the effects, quantitatively, qualitatively, or both;

(ii) It can provide guidance to developing land-based producer States in specific and concrete terms about the nature of the requisite information and data;

(iii) It can provide guidance to such States about initiating the process of the collection of the requisite information and data.

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PREPARATORY COMMISSION FOR THE INTERNATIONAL
SEA-BED AUTHORITY AND FOR THE INTERNATIONAL
TRIBUNAL FOR THE LAW OF THE SEA
Special Commission 1
Fourth session

Basic principles for the implementation of measures to reduce the adverse effects on developing land-based producer States likely to be seriously affected as a result of activities in the Area

Proposals by the group of Eastern European socialist countries

1. In accordance with the recommendations of the Preparatory Commission, the International Sea-Bed Authority shall formulate general principles underlying the system of compensatory measures to reduce the adverse effects on those developing States whose export earnings are seriously affected as a result of a reduction in the volume of exports of a certain mineral to the extent that such reduction is caused by activities in the Area. Measures to reduce such adverse effects in each specific case shall be implemented through bilateral agreements between a developing traditional exporter of the affected mineral and a State producing a similar mineral from the resources of the Area which traditionally used to import that mineral from the country in question, concluded in accordance with general principles to be established by the Authority and on the basis of a model agreement to be approved by the Council.

2. The parties to the agreements mentioned in paragraph 1 above shall be:

(a) Developing countries which have traditionally, for at least five years, produced the affected mineral for export in significant quantities and whose average annual income from the export of that mineral over the specified period accounts for a significant share of the total volume of those countries' export earnings, provided that the average annual level of their earnings from exports of the affected mineral during the specified period declines significantly for the reasons mentioned in paragraph 3 below;

(b) States which have traditionally, for at least five years, imported the affected mineral from the developing country in question, if such States intend significantly to reduce their imports from that country as a result of the development of production of a similar mineral from the resources of the Area (traditional importer).

3. The agreements mentioned in paragraph 1 shall be concluded in order to reduce the adverse effects on a specific developing country resulting from a significant reduction in its earnings from the export of the affected mineral, caused by a reduction in purchases in that developing country by States which traditionally imported the raw material concerned, as a result of the production by those States of similar minerals from the resources of the Area.

/...

4. The yardstick for determining the unfavourable effects on a specific developing country's export earnings and for formulating measures to compensate for them shall be the average annual income of the developing country in question derived from the export of the affected mineral over the five-year period immediately preceding either the date of the adoption by the Authority of the relevant rules, regulations and procedures or 1 January of the year in which the earliest commercial production in the Area is planned to commence or in which the earliest commercial production in the Area commences.

5. During a ten-year preferential period established from a date determined by the parties to the agreement, the measures envisaged in the agreement shall be implemented to compensate for the unfavourable effects on the export earnings of the developing country in question. Another preferential period (period of validity of the agreement) may be established by agreement between the parties to the agreement.

6. (a) The agreement between the interested parties concerned shall be concluded, in accordance with the general principles established by the Authority and on the basis of the model agreement approved by the Council, as a result of negotiations during which the parties shall:

(i) Agree on a specific level for average annual base data;

(ii) Identify the immediate causes and measure the extent of the unfavourable effects on the export earnings of the developing country concerned;

(iii) Agree on specific measures to compensate for the unfavourable effects on the export earnings of the developing country concerned.

(b) The results of the negotiations shall be embodied in an agreement of the parties;

(c) The measures to be agreed by the parties to compensate for the unfavourable effects on the developing countries' export earnings shall specify that the developed traditional importers concerned agree to maintain a fixed average annual level for their purchases during the preferential period mentioned in paragraph 5; during the first five years, this level will be not lower than the average annual level for the five base years and then the fixed level of purchases will be gradually reduced. In this connection, the excess of purchases over the level for the base period which occurred between the base and the preferential periods shall be taken into account.

7. (a) The interested parties shall initiate negotiations, if possible immediately after the developed State concerned or its natural or juridical persons conclude a contract with the Authority for the exploitation of the resources of the Area, and endeavour to conclude them within a reasonable period of time so that an arrangement between the parties can be achieved, if possible before the commencement of commercial production of minerals from the resources of the Area by the developed States involved in the negotiations. If necessary the Authority, represented by the Council, shall suggest to the interested parties that they should initiate the appropriate negotiations and may, at the request of the parties, provide mediation in the conduct of the negotiations;

/...

(b) The parties shall keep the Authority constantly and fully informed of the progress of the negotiations and of the arrangements achieved by them. The Authority shall act as depositary of the intergovernmental agreements achieved between the parties;

(c) If the unfavourable effects on the export earnings of a particular developing traditional exporter are the result of the actions not of one but of several traditional importers, negotiations shall be conducted with the participation of all interested parties. The arrangements achieved as a result of such negotiations shall be formulated in several bilateral agreements.

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LOS/PCN/SCN.1/WP.9
4 August 1986

ORIGINAL: ENGLISH

PREPARATORY COMMISSION FOR
THE INTERNATIONAL SEA-BED
AUTHORITY AND FOR THE
INTERNATIONAL TRIBUNAL
FOR THE LAW OF THE SEA
Special Commission 1

PROVISIONS OF THE CONVENTION DEALING WITH A SYSTEM OF COMPENSATION

Working paper by the Secretariat

1. In connection with the deliberations of Special Commission 1 during the fourth session of the Preparatory Commission with regard to possible remedial measures for the problems which may be encountered by developing land-based producer States as a result of future sea-bed production, the Chairman of the Special Commission stated that "one specific area which requires attention is studies on the establishment of a compensation fund" (LOS/PCN/L.31, para. 14). Accordingly, the Secretariat was requested by the Special Commission, through the Preparatory Commission, to prepare a working paper examining the provisions of the Convention dealing with a compensation fund (LOS/PCN/L.31, para. 19).

2. The relevant provisions are contained in various articles in part XI of the United Nations Convention on the Law of the Sea, dealing with "the Area". With a view to facilitating an in-depth examination the present paper compiles them in a systematic manner, placing them in a contextual framework.

Convention provisions

3. Under part XI of the Convention, provisions dealing with a "system of compensation" relevant for developing land-based producer States appear in articles 151 (10), 160 (2) (l), 162 (2) (n) and 164 (2) (d). The term "compensation fund" occurs in article 171 (f). Related provisions are contained in articles 150 (h), 161 (8) (b), 159 (8) and 173 (2) (c). Resolution I of the Third United Nations Conference on the Law of the Sea, which was adopted along with the Convention, also includes related provisions in paragraphs 5 (i) and 9.

/...

Production policies and a system of compensation or other measures of economic adjustment assistance: article 151 (10)

4. "Production policies" with regard to the production of minerals from the Area, i.e., the sea-bed and ocean floor and subsoil thereof, beyond the limits of national jurisdiction, are specified in article 151. Paragraph 10 of this article states:

> "Upon the recommendation of the Council on the basis of advice from the Economic Planning Commission, the Assembly shall establish a system of compensation or take other measures of economic adjustment assistance including co-operation with specialized agencies and other international organizations to assist developing countries which suffer serious adverse effects on their export earnings or economies resulting from a reduction in the price of an affected mineral or in the volume of exports of that mineral, to the extent that such reduction is caused by activities in the Area. The Authority on request shall initiate studies on the problems of those States which are likely to be most seriously affected with a view to minimizing their difficulties and assisting them in their economic adjustment."

5. Several salient points in the above provisions can be mentioned:

(a) A system of compensation or other measures of economic adjustment assistance would be for the purpose of assisting developing countries which suffer serious adverse effects on their export earnings or economies. In this connection, the discussions in the Special Commission on the issues of the selection of criteria (effects on export earnings or effects on economies), measurement of indicators representing the criteria and the quantification of yardsticks on the basis of the indicators can be recalled (LOS/PCN/L.9 and L.18). The matter of defining "serious adverse effects" was also discussed in the Special Commission;

(b) The serious adverse effects on the export earnings or economies would have to result from a reduction in the price of an affected mineral or in the volume of exports of that mineral. In this connection, it would be worth while to mention that under certain circumstances there may not be any observable decline in export earnings, because in order to offset the effects of a fall in price increased volumes may be sold (LOS/PCN/SCN.1/WP.4, para. 7);

(c) A reduction in the price of an affected mineral or in the volume of exports of that mineral would be relevant for the purpose, to the extent that such reduction is caused by activities in the Area, i.e., all activities of exploration for, and exploitation of, the resources of the Area. In this connection, the discussions in the Special Commission on the methodology of establishing the relevant cause-and-effect relationships are useful (LOS/PCN/L.18, paras. 9 and 10);

(d) A system of compensation would be established or other measures of economic adjustment assistance would be taken by the Assembly, upon the recommendation of the Council, on the basis of advice of the Economic Planning Commission. This sequential procedure is also addressed in articles 164 (2) (d), 162 (2) (n) and 162 (2) (l);

/...

(e) A system of compensation or other measures of economic adjustment assistance can include co-operation with specialized agencies and other international organizations;

(f) Even before the effects actually occur, the Authority on request can initiate studies on the problems of those States which are likely to be most seriously affected with a view to minimizing their difficulties and assisting them in their economic adjustment.

6. According to the above provisions, in order to assist developing countries, "the Assembly shall establish a system of compensation or take other measures of economic adjustment assistance". A point that can be brought to the attention of the Special Commission is that the wording in this provision appears to imply the possibility of selecting among alternatives.

Objectives: article 150 (h)

7. Production policies in article 151 were drawn up pursuant to the objectives specified in article 150 with regard to the activities in the Area. Activities in the Area shall be carried out in such a manner as to foster healthy development of the world economy and balanced growth of international trade and to promote international co-operation for the overall development of all countries, especially developing States and with a view to ensuring a number of objectives specified in this article. One of the objectives is particularly relevant for the matter of system of compensation or other measures of economic adjustment assistance:

> "the protection of developing countries from adverse effects on their economies or on their export earnings resulting from a reduction in the price of an affected mineral, or in the volume of exports of that mineral, to the extent that such reduction is caused by activities in the Area, as provided in article 151" [Article 150 (h)].

8. It should be pointed out that a number of provisions in the Convention can be considered to be aimed, inter alia, at the above objective. The provisions on the production ceiling contained in paragraphs 2 to 7 of article 151, on commodity arrangements or agreements contained in article 151 (1), and on safeguards against unfair economic practices contained in article 151 (8) are of relevance in this connection.

Procedure for adopting a system of compensation or other measures of economic adjustment assistance: articles 164 (2) (d), 162 (2) (n) and 160 (2) (l)

9. The sequential procedure to be followed in deciding on the establishment of a system of compensation or adopting other measures of economic adjustment assistance has been laid down clearly in the provisions of the Convention. First, it would be the Economic Planning Commission, an organ of the Council, which would propose to the Council a system of compensation or other measures of economic adjustment assistance. According to article 164 (2) (d):

"The Commission shall:

...

> "(d) propose to the Council for submission to the Assembly, as provided in article 151, paragraph 10, a system of compensation or other measures of economic adjustment assistance for developing States which suffer adverse effects caused by activities in the Area. The Commission shall make the recommendations to the Council that are necessary for the application of the system or other measures adopted by the Assembly in specific cases".

10. The above proposals of the Economic Planning Commission would be of an advisory nature. On the basis of this advice from the Commission, the Council would, then, make recommendations to the Assembly. This is specified in article 162 which enumerates the powers and functions of the Council; subparagraph (n) of paragraph 2 of this article states:

"... the Council shall:

...

> "(n) make recommendations to the Assembly, on the basis of advice from the Economic Planning Commission, for a system of compensation or other measures of economic adjustment assistance as provided in article 151, paragraph 10".

11. The next step of the process would be for the Assembly to decide on the establishment of a system of compensation or other measures of economic adjustment assistance. Article 160 enumerates the powers and functions of the Authority; subparagraph (l) of paragraph 2 of this article states:

"... the powers and functions of the Assembly shall be:

...

> "(l) to establish, upon the recommendation of the Council, on the basis of advice from the Economic Planning Commission, a system of compensation or other measures of economic adjustment assistance as provided in article 151, paragraph 10".

12. It should be mentioned that, once a system of compensation or other measures of economic adjustment assistance are adopted, at the implementation stage, according to article 164 (2) (d), the Economic Planning Commission is required to make necessary recommendations to the Council for the application of the system or the measures in specific cases.

13. It would be interesting to note the decision-taking procedure with regard to the establishment of a system of compensation or other measures of economic adjustment assistance. When making recommendations to the Assembly, on the basis of advice from the Economic Planning Commission, for a system of compensation or

/...

other measures of economic adjustment assistance the Council may have to take decisions on questions of substance. Such decision-taking would require a "two-thirds majority" as specified in article 161 (8) (b) which states:

> "Decisions on questions of substance arising under the following provisions shall be taken by a two-thirds majority of the members present and voting, provided that such majority includes a majority of the members of the Council: article 162, paragraph 2, subparagraphs (f); (g); (h); (i); (n); (p); (v); article 191".

In the case of the Assembly, decision-taking on questions of substance with regard to the establishment of a system of compensation or other measures of economic adjustment assistance, would also require a "two-thirds majority". This is evident from article 159 (8):

> "Decisions on questions of substance shall be taken by a two-thirds majority of the members present and voting, provided that such majority includes a majority of the members participating in the session. When the issue arises as to whether a question is one of substance or not, that question shall be treated as one of substance unless otherwise decided by the Assembly by the majority required for decisions on questions of substance".

Financial aspects: articles 171 and 173

14. If a system of compensation is established, financing of the system would be a very important consideration. The Convention does not address the issue of financing directly, except that when dealing with the "funds of the authority" in article 171 it includes "payments to a compensation fund" as an item in the funds. This article in itself does not create a compensation fund but merely defines what may constitute the funds of the Authority. It states:

> "The funds of the Authority shall include:
>
> "(a) assessed contributions made by members of the Authority in accordance with article 160, paragraph 2 (e);
>
> "(b) funds received by the Authority pursuant to Annex III, article 13, in connection with activities in the Area;
>
> "(c) funds transferred from the Enterprise in accordance with Annex IV, article 10;
>
> "(d) funds borrowed pursuant to article 174;
>
> "(e) voluntary contributions made by members or other entities; and
>
> "(f) payments to a compensation fund, in accordance with article 151, paragraph 10, whose sources are to be recommended by the Economic Planning Commission".

/...

15. While the sources of a compensation fund would be recommended by the Economic Planning Commission, it is not mentioned directly whether the Commission is required to make these recommendations as a part of its proposal for a system of compensation under article 164 (2) (d).

16. On the expenditure side, article 173 which deals with the "expenses of the Authority" mentions compensation to developing States as an item of expenditure. This article is reproduced below:

> "1. The contributions referred to in article 171, subparagraph (a), shall be paid into a special account to meet the administrative expenses of the Authority until the Authority has sufficient funds from other sources to meet those expenses.
>
> "2. The administrative expenses of the Authority shall be a first call upon the funds of the Authority. Except for the assessed contributions referred to in article 171, subparagraph (a), the funds which remain after payment of administrative expenses may, inter alia:
>
> "(a) be shared in accordance with article 140 and article 160, paragraph 2 (g);
>
> "(b) be used to provide the Enterprise with funds in accordance with article 170, paragraph 4;
>
> "(c) be used to compensate developing States in accordance with article 151, paragraph 10, and article 160, paragraph 2 (l)".

Preparatory work: resolution I

17. By resolution I, the Third United Nations Conference on the Law of the Sea established the Preparatory Commission for the International Sea-Bed Authority and for the International Tribunal for the Law of the Sea for the purposes of ensuring the entry into effective operation without undue delay of the Authority and the Tribunal and of making the necessary arrangements for the commencement of their functions. One of the functions of the Preparatory Commission is to:

> "undertake studies on the problems which would be encountered by developing land-based producer States likely to be most seriously affected by the production of minerals derived from the Area with a view to minimizing their difficulties and helping them to make the necessary economic adjustment, including studies on the establishment of a compensation fund, and submit recommendations to the Authority thereon" [Resolution I, para. 5 (i)].

18. According to paragraph 9 of the resolution these functions are entrusted to a special commission:

> "The Commission shall establish a special commission on the problems which would be encountered by developing land-based producer States likely to be most seriously affected by the production of minerals derived from the Area and entrust it to the functions referred to in paragraph 5 (i)" [Resolution I, para. 9].

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LOS/PCN/SCN.1/WP.10
2 March 1987

ORIGINAL: ENGLISH

PREPARATORY COMMISSION FOR THE INTERNATIONAL
SEA-BED AUTHORITY AND FOR THE INTERNATIONAL
TRIBUNAL FOR THE LAW OF THE SEA
Special Commission 1
Fifth session
Kingston, Jamaica
30 March-16 April 1987

LAW OF THE SEA: SYSTEM OF COMPENSATION AND/OR A COMPENSATION FUND

Legislative history of articles 151 (10), 160 (2) (l), 162 (2) (n), 164 (2) (d), 171 (f) and 173 (2) (c) and resolution I, paragraphs 5 (i) and 9 of the United Nations Convention on the Law of the Sea

Background paper by the Secretariat

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INTRODUCTION

1. The Secretariat was requested by the Special Commission 1 of the Preparatory Commission for the International Sea-Bed Authority and for the International Tribunal for the Law of the Sea, at its resumed fourth session, held in New York from 11 August to 5 September 1986 (LOS/PCN/L.37, para. 23 (b)), to prepare a legislative history of the provisions of the Convention dealing with a system of compensation and/or a compensation fund. The following study has been prepared in accordance with that request.

2. For practical reasons, the present study gives only a summary of the major elements of the legislative history of the provisions of the Convention and resolution I which refer to a system of compensation and/or a compensation fund. Included herein is a chronological reproduction of the various texts which had been elaborated over the years leading to the final version of the provisions to be found in the Convention and in resolution I.

3. It should be emphasized that the mere presentation of successive negotiating texts of the Conference can in no way give a complete picture of the substantive discussions and negotiations which took place, nor does it reflect the various arguments put forth and positions taken both for and against the creation of a compensation fund by delegations during the elaboration of those texts. A full legislative history containing all relevant statements made and positions expressed will be published at a later stage by the Office of the Special Representative for the Law of the Sea.

4. For the purpose of the present study it may be sufficient to mention that at the end of the process of negotiation which took place during the Third Conference on the Law of the Sea the following provisions were adopted. Those in the Convention include:

"Article 151

"Production policies

"...

"10. Upon the recommendation of the Council on the basis of advice from the Economic Planning Commission, the Assembly shall establish a system of compensation or take other measures of economic adjustment assistance including co-operation with specialized agencies and other international organizations to assist developing countries which suffer serious adverse effects on their export earnings or economies resulting from a reduction in the price of an affected mineral or in the volume of exports of that mineral, to the extent that such reduction is caused by activities in the Area. The Authority on request shall initiate studies on the problems of those States which are likely to be most seriously affected with a view to minimizing their difficulties and assisting them in their economic adjustment."

/...

"Article 160

"Powers and functions

"...

"2. In addition, the powers and functions of the Assembly shall be:

"...

"(l) To establish, upon the recommendation of the Council, on the basis of advice from the Economic Planning Commission, a system of compensation or other measures of economic adjustment assistance as provided in article 151, paragraph 10".

"Article 162

"Powers and functions

"...

"2. In addition, the Council shall:

"...

"(n) Make recommendations to the Assembly, on the basis of advice from the Economic Planning Commission, for a system of compensation or other measures of economic adjustment assistance as provided in article 151, paragraph 10".

"Article 164

"The Economic Planning Commission

"...

"2. The Commission shall:

"...

"(d) Propose to the Council for submission to the Assembly, as provided in article 151, paragraph 10, a system of compensation or other measures of economic adjustment assistance for developing States which suffer adverse effects caused by activities in the Area. The Commission shall make the recommendations to the Council that are necessary for the application of the system or other measures adopted by the Assembly in specific cases."

/...

"Article 171

"Funds of the Authority

"The funds of the Authority shall include:

"...

"(f) Payments to a compensation fund, in accordance with article 151, paragraph 10, whose sources are to be recommended by the Economic Planning Commission."

"Article 173

"Expenses of the Authority

"...

"2. The administrative expenses of the Authority shall be a first call upon the funds of the Authority. Except for the assessed contributions referred to in article 171, subparagraph (a), the funds which remain after payment of administrative expenses may, inter alia:

"(a) Be shared in accordance with article 140 and article 160, paragraph 2 (g);

"(b) Be used to provide the Enterprise with funds in accordance with article 170, paragraph 4;

"(c) Be used to compensate developing States in accordance with article 151, paragraph 10, and article 160, paragraph 2 (l)."

The relevant provisions in resolution I include the following:

"...

"5. The Commission shall:

"...

"(i) Undertake studies on the problems which would be encountered by developing land-based producer States likely to be most seriously affected by the production of minerals derived from the Area with a view to minimizing their difficulties and helping them to make the necessary economic adjustment, including studies on the establishment of a compensation fund, and submit recommendations to the Authority thereon.

"...

/...

"9. The Commission shall establish a special commission on the problems which would be encountered by developing land-based producer States likely to be most seriously affected by the production of minerals derived from the Area and entrust it to the functions referred to in paragraph 5 (i)."

5. Although the scope of this legislative history would normally encompass only the period covering the 11 sessions of the Third United Nations Conference on the Law of the Sea which were held from 1973 to 1982, it was considered worthwhile to provide some information on the work of the Sea-Bed Committee on the issue since General Assembly resolutions 2749 (XXV) and 2750 A (XXV), both of 17 December 1970, had already drawn attention to the need to minimize the adverse effects of sea-bed mining on the economic well-being of developing countries and to propose effective solutions for dealing with the problems resulting therefrom.

6. This study is therefore divided into two parts. Part I relates briefly the consideration of the subject in the Sea-Bed Committee from 1971 to 1973, while part II traces, in chronological order, the development of provisions relating to a system of compensation and/or a compensation fund throughout the 11 sessions of the Third United Nations Conference on the Law of the Sea.

I. DEVELOPMENTS IN THE SEA-BED COMMITTEE

7. On 21 December 1968, the General Assembly adopted resolution 2467 A, B, C and D (XXIII) establishing the Sea-Bed Committee. 1/ Beginning in 1971, pursuant to Assembly resolution 2750 C (XXV) of 17 December 1970, the Committee acted as a "preparatory committee" for the Third United Nations Conference on the Law of the Sea. The issue of the adverse impact of the production of deep sea-bed minerals on the economy of land-based developing countries and the possible ways of alleviating it had been mentioned during the 1968-1970 sessions of the Committee. It was, however, during the 1971-1973 sessions of the Committee that the question of a system of compensation and/or a compensation fund was considered. This issue will therefore be presented in the context of the sessions of the Sea-Bed Committee which took place during the years 1971-1973.

A. 1971 sessions

8. The terms of reference of Sub-Committee I of the Sea-Bed Committee in 1971 included the consideration of the economic implications of the exploitation of the resources of the sea-bed and the ocean floor for the well-being of developing land-based producers and the elaboration of effective methods for dealing with those problems with a view to minimizing any adverse economic effects caused by the fluctuation of prices of raw materials resulting from such activities.

9. In accordance with this mandate, the Secretary-General prepared a report entitled "Possible impact of the sea-bed mineral production in the area beyond national jurisdiction on world markets, with special reference to the problems of developing countries; a preliminary assessment," which contemplated the possibility of compensatory financing by the international machinery through a reverse

/...

compensatory flow of a fiscal nature as a means of protection for the developing land-based producers. 2/

10. Although some delegations expressed interest in a system of compensation and/or a compensation fund, 3/ Sub-Committee I did not, however, consider it appropriate to formulate specific recommendations with regard to the issue.

B. 1972 sessions

11. During these sessions, a subsequent report of the Secretary-General entitled "Additional notes on the possible economic implications of mineral production from the international sea-bed area" was introduced in Sub-Committee I. Methods under consideration to prevent the production of sea-bed minerals from adversely affecting developing land-based producers included, *inter alia*, those of either a preventive or a compensatory nature. 4/

12. Delegations expressing their views at this stage concerning the economic implications of the sea-bed production ruled out a system of compensation as a possible remedial measure and instead showed a strong preference for preventive methods. 5/

C. 1973 sessions

13. Despite expressions of concern regarding the economic implications of sea-bed mining on developing land-based producers of minerals, 6/ the texts illustrating areas of both agreement and disagreement regarding the programme of work of the Sub-Committee contained only a small number of provisions on the prevention of fluctuation in the prices, as well as the regulation of the production, marketing and distribution of raw materials.

14. During these sessions no reference was made in the official records to a system of compensation and/or a compensation fund as a possible remedial measure for the problems which might be encountered by developing land-based producer States as a result of future sea-bed production.

II. DEVELOPMENTS DURING THE THIRD UNITED NATIONS CONFERENCE ON THE LAW OF THE SEA

15. The first session of the Conference, held at New York from 3 to 15 December 1973, dealt with procedural matters. During the session it was decided that three main committees should be constituted to deal, *inter alia*, with the topics allotted to the three sub-committees of the Sea-Bed Committee. The first Committee of the Conference was therefore to assume the treatment of the topics formerly assigned to Sub-Committee I of the Sea-Bed Committee.

A. Second session

(Caracas, 20 June-29 August 1974)

16. As the basis for discussion concerning the economic implications of sea-bed mining which might adversely affect developing land-based producers, the following studies and statement referring to a system of compensation and/or a compensation fund were introduced in the First Committee:

(a) Economic implications of sea-bed mineral development in the international area: report of the Secretary-General (A/CONF.62/25);

(b) Statement made by Mr. G. D. Arsenis on behalf of the Secretary-General of the United Nations Conference on Trade and Development at its 42nd meeting, held on 15 July 1974 (A/CONF.62/32);

(c) Case study of manganese (TD/B/483);

(d) Exploitation of the mineral resources of the sea-bed beyond national jurisdiction: issues of international commodity policy (TD/B/449);

(e) Mineral production from the area of the sea-bed beyond national jurisdiction: issues of international commodity policy (TD/113/Supp.4).

17. Following the introduction of the aforementioned documents, and although some delegations did not entirely exclude a system of compensation among other remedial measures to alleviate the adverse effects of sea-bed mining, 7/ the First Committee did not elaborate detailed provisions which would guarantee a solution to the problem.

B. Third session

(Geneva, 17 March-9 May 1975)

18. Pursuant to a decision of the Conference, the Chairman of the First Committee prepared a single negotiating text covering the main issues falling within the terms of reference of the Committee.

19. The relevant provisions of the informal single negotiating text did not contemplate a system of compensation and/or a compensation fund as a remedial measure to protect the revenues and economies of developing land-based producer States and proposed instead, among other unspecified measures, integrated commodity arrangements and buffer stock arrangements. 8/

/...

C. *Fourth session*

(New York, 15 March-7 May 1976)

20. During this session, the Conference adopted a proposal requesting the chairmen of the three Committees to revise the informal single negotiating text which they had prepared during the 1975 session.

21. The revised single negotiating text 9/ in its article 9 effected some changes including the incorporation of a provision on a system of compensation as one of various means of protecting developing land-based producer States against the adverse effects of sea-bed mining. The relevant provisions of article 9 of the revised single negotiating text are quoted below:

"*General principles regarding economic aspects of activities in the Area*

"*Article 9*

"Activities in the Area shall be undertaken in such a manner as to:

"...

"4. Protect against the adverse economic effects of a substantial decline in the mineral export earnings of developing countries for whom export revenues from minerals or raw materials also under exploitation in the Area represent a significant share of their gross domestic product or foreign exchange earnings, when such decline is caused by activities in the Area, by:

"...

"(iii) A compensatory system of economic adjustment assistance in respect of the adverse effects referred to in this paragraph." 10/

D. *Fifth session*

(New York, 2 August-17 September 1976)

22. During the session, the President of the Conference drew the attention of the Conference to the need to consider measures to prevent or mitigate possible adverse consequences of sea-bed mining on the economies of developing countries, through production control and global arrangements as well as commodity price stabilization and compensation. 11/

23. Nevertheless, with respect to a system of compensation and/or a compensation fund, no amendment to the revised single negotiating text was proposed by delegations and no debate conducted on the issue during the session.

/...

E. Sixth session

(New York, 23 May-15 July 1977)

24. During the session, in addition to article 9 of the revised single negotiating text which already embodied provisions dealing with a system of compensation at the informal meetings of the First Committee some delegations submitted informal proposals including a system of compensation for articles 16 (Powers and functions of the Assembly), 28 (Powers and functions of the Council) and 30 (the Economic Planning Commission).

25. At the end of the sixth session, the revised single negotiating text was replaced by an informal composite negotiating text prepared by the President of the Conference in co-operation with the chairmen of the Committees and the Rapporteur-General. The question of a system of compensation for developing land-based producer States which might suffer adverse effects as a result of sea-bed mining is referred to in articles 150, 158, 160 and 162, as reproduced below:

"Article 150. Policies relating to activities in the Area

"...

"D. Following recommendations from the Council on the basis of advice from the Economic Planning Commission, the Assembly shall establish a system of compensation for developing countries which suffer adverse effects on their export earnings or economies resulting from a reduction in the price of an affected mineral or the volume of that mineral exported, to the extent that such reduction is caused by activities in the Area."

"Article 158. Powers and functions [of the Assembly]

"...

"2. In addition, the powers and functions of the Assembly shall be:

"...

"(xiv) Establishment, upon the recommendation of the Council on the basis of advice from the Economic Planning Commission, of a system of compensation as provided in subparagraph (g) (D) of paragraph 1 of article 150".

"Article 160. Powers and functions [of the Council]

"...

/...

"2. In addition, the Council shall:

"...

"(xiii) Make recommendations to the Assembly on the basis of advice from the Economic Planning Commission for a system of compensation as provided in subparagraph (g) (D) of paragraph 1 of article 150".

"Article 162. The Economic Planning Commission

"...

"7. The Commission shall propose to the Council for submission to the Assembly a system of compensation for developing countries who suffer adverse effects caused by activities in the Area, as provided in subparagraph (g) (D) of paragraph 1 of article 150. After adoption by the Assembly of such system of compensation the Economic Planning Commission shall make such recommendations to the Council as are necessary for the application of the system in concrete cases." 11/

F. Seventh session

(First part, Geneva, 28 March-19 May 1978; resumed seventh session, New York, 21 August-15 September 1978)

26. Pursuant to a decision of the Conference, 12/ the First Committee established three negotiating groups dealing, respectively, with the system of exploration and exploitation, resource policy (Negotiating Group 1), financial arrangements of the Authority (Negotiating Group 2) and composition, powers and functions of the organs of the Authority (Negotiating Group 3).

27. With respect to the question of a system of compensation, the three aforementioned negotiating groups addressed the issue at various stages of their negotiations and in this connection, some informal suggestions were proposed during these meetings on articles 150 (Production policies), 172 (Expenses of the Authority), 160 (Powers and functions of the Council and 162 (the Economic Planning Commission).

G. Eighth session

(First part, Geneva, 19 March-27 April 1979; resumed eighth session, New York, 19 July-24 August 1979)

28. At the end of the first part of the session, the Conference undertook a revision of the informal composite negotiating text (A/CONF.62/WP.10/Rev.1) which incorporated, among other proposals, some suggestions from the three negotiating groups of the First Committee related to a system of compensation. The relevant provisions of the Informal composite negotiating text/Revision 1 are reproduced below:

/...

"Article 151. Production policies

"Without prejudice to the objectives set forth in article 150, and for the purpose of implementing the provisions of article 150, paragraph (g):

"...

"4. Following recommendations from the Council on the basis of advice from the Economic Planning Commission, the Assembly shall establish a system of compensation for developing countries which suffer adverse effects on their export earnings or economies resulting from a reduction in the price of an affected mineral or the volume of that mineral exported, to the extent that such reduction is caused by activities in the Area."

"Article 160. Powers and functions [of the Assembly]

"...

"2. In addition, the powers and functions of the Assembly shall be:

"...

"(l) Establishment, upon the recommendation of the Council on the basis of advice from the Economic Planning Commission, of a system of compensation as provided in article 151, paragraph 4".

"Article 162. Powers and functions [of the Council]

"...

"2. In addition the Council shall:

"...

"(m) Make recommendations to the Assembly on the basis of advice from the Economic Planning Commission for a system of compensation as provided in article 151, paragraph 4".

"Article 164. Economic Planning Commission

"...

"2. The Commission shall:

"...

/...

"(d) Propose to the Council for submission to the Assembly a system of compensation for developing countries who suffer adverse effects caused by activities in the Area, as provided in article 151, paragraph 4. After adoption by the Assembly of such system of compensation the Economic Planning Commission shall make such recommendations to the Council as are necessary for the application of the system in concrete cases".

"Article 173. Expenses of the Authority

"...

"2. The administrative expenses of the Authority shall be a first call upon the funds of the Authority. Apart from the funds referred to in article 171, paragraph (a), the funds which remain after payment of administrative expenses may, *inter alia*:

"...

"(c) Be used to compensate developing countries in accordance with article 151, paragraph 4, and article 160, paragraph 2 (1).

H. Ninth session

(First part, New York, 3 March-4 April 1980; resumed ninth session, Geneva, 28 July-25 August 1980)

29. On 11 April 1980 the Conference completed a second revision of the informal composite negotiating text (A/CONF.62/WP.10/Rev.2). No substantive change was made with respect to the provisions dealing with a system of compensation in articles 151, 160 and 162. However, the following drafting change with regard to a system of compensation was incorporated in article 164, paragraph 2 (m), and in article 173, paragraph 2 (c): the expression "developing countries" was replaced by "developing States". 13/

30. During the resumed ninth session the Working Group of 21 14/ of the First Committee proposed for incorporation in the next revision of the informal composite negotiating text (A/CONF.62/WP.10/Rev.2) the following amendments to the relevant provisions of articles 151 and 162 relating to a system of compensation:

"Article 151. Production policies

"...

"4. Following recommendations from the Council on the basis of advice from the Economic Planning Commission, the Assembly shall establish a system of compensation or other measures of economic adjustment assistance including co-operation with specialized agencies and other international organizations to assist developing countries which suffer serious adverse effects on their export earnings or economies resulting from a reduction in the price of an affected mineral on the volume of mineral exported, to the extent that such reduction is caused by activities in the Area. The Authority on request shall initiate studies on the problems of those States which are likely to be most seriously affected with a view to minimizing their difficulties and assisting them in their economic adjustment."

"Article 162. Powers and functions [of the Council]

"...

"2. In addition, the Council shall:

"...

"(m) Make recommendations to the Assembly on the basis of advice from the Economic Planning Commission for a system of compensation or other measures of economic adjustment assistance as provided in article 151, paragraph 4".

31. Following the introduction of the reports of the Working Group of 21, several delegations commented on the looseness and vagueness of the provisions dealing with a system of compensation 15/ and proposed the establishment of a special fund or a special compensation fund for the purpose of compensating developing land-based producer States which might be affected by sea-bed production. 16/

32. A further revision of the negotiating text entitled "Draft Convention on the Law of the Sea (Informal Text)" was adopted on 22 September 1980. The relevant provisions in that document (A/CONF.62/WP.10/Rev.3 and Add.1) dealing with the question of a system of compensation read as follows:

"Article 151. Production policies

"...

"4. Following recommendations from the Council on the basis of advice from the Economic Planning Commission, the Assembly shall establish a system of compensation or other measures of economic adjustment assistance including co-operation with specialized agencies and other international organizations to assist developing countries which suffer serious adverse effects on their export earnings or economies resulting from a reduction in the price of an affected mineral or the volume of mineral exported, to the extent that such reduction is caused by activities in the Area. The Authority on request shall initiate studies on the problems of those States which are likely to be most seriously affected with a view to minimizing their difficulties and assisting them in their economic adjustment."

/..

"Article 160. Powers and functions [of the Assembly]

"...

"2. In addition, the powers and functions of the Assembly shall be:

"...

"(l) Establishment upon the recommendation of the Council on the basis of advice from the Economic Planning Commission of a system of compensation as provided in article 151, paragraph 4".

"Article 162. Powers and functions [of the Council]

"...

"2. In addition, the Council shall:

"...

"(m) Make recommendations to the Assembly on the basis of advice from the Economic Planning Commission for a system of compensation or other measures of economic adjustment assistance as provided in article 151, paragraph 4".

"Article 164. Economic Planning Commission

"...

"2. The Commission shall:

"...

"(d) Propose to the Council for submission to the Assembly a system of compensation for developing States which suffer adverse effects caused by activities in the Area, as provided in article 151, paragraph 4. After adoption by the Assembly of such system of compensation, the Economic Planning Commission shall make such recommendations to the Council as are necessary for the application of the system of concrete cases."

"Article 173. Expenses of the Authority

"...

"2. ...

"(c) Be used to compensate developing States in accordance with article 151, paragraph 4, and article 160, paragraph 2 (l)".

I. Tenth session

(First part, New York, 9 March-17 April 1981; resumed tenth session, Geneva, 3-28 August 1981)

33. During the first part of the session, the Working Group of 21 of the First Committee held discussions on the composition, mandate, decision-making system and financing of the Preparatory Commission based upon the report of the President of the Conference (A/CONF.62/L.55). None of the informal suggestions concerning the mandate of the Preparatory Commission introduced in that Working Group was related to a system of compensation.

34. The publication of the draft Convention on the Law of the Sea (A/CONF.62/L.78) at the end of the Tenth Session did not introduce any substantive or drafting changes in article 151, paragraph 4; article 160, paragraph 2 (l); article 162, paragraph 2 (m); article 164, paragraph 2 (d); and article 173, paragraph 2 (c), which dealt with a system of compensation.

J. Eleventh session

(First part, New York, 8 March-30 April 1982; resumed eleventh session, New York, 22-24 September 1982; final part, Montego Bay, 6-10 December 1982)

35. During this session the Working Group of 21 submitted a new report to the First Committee which included its recommendation concerning a "draft resolution establishing the Preparatory Commission for the International Sea-Bed Authority and the International Tribunal for the Law of the Sea" embodying the following provision dealing with a system of compensation and/or a compensation fund:

> "5. The Commission shall:
>
> "...
>
> "(i) Undertake studies on the problems which would be encountered by developing land-based producers likely to be most seriously affected by the production of the Area with a view to minimizing their difficulty and helping them to make the necessary economic adjustment, including the establishment of a compensation fund and submit recommendations to the Authority thereon."

36. Following the introduction of the report of the First Committee, several delegations expressed their views with regard to a system of compensation and/or a compensation fund. On the one hand, some delegations stated that the relevant provisions of the draft Convention would not be sufficiently protective of developing land-based producer States and therefore the Preparatory Commission should be empowered to establish a special commission dealing with their problems. 17/ On the other hand, other delegations wished to consider the issue only in conjunction with a limitation of production 18/ or a system of adjustment assistance. 19/

/...

37. Pursuant to the decision of the Conference to apply rule 33 of the rules of procedure on proposals and amendments, the Conference received, among other proposals, the following formal amendments dealing with a system of compensation and/or a compensation fund:

(a) The delegation of Gabon proposed the following amendment:

"Article 160, paragraph 2 (l): replace the paragraph by the following text:

"'(l) Establishment, pursuant to the provisions of article 151, paragraph 4, of a compensation fund for the exclusive benefit of developing States which are land producers of the same minerals as those extracted from the polymetallic nodules and whose export receipts or economies would be affected by the fact that the resources of the Area are exploited'"; 20/

(b) The Group of 77 proposed the following amendments:

"Article 171: add a new subparagraph (f) to read as follows:

"'(f) Payments to a compensation fund, in accordance with article 151, paragraph 4, whose sources are to be recommended by the Economic Planning Commission.'"

"Draft Resolution I [on the Preparatory Commission]: add a new paragraph 8 (bis) to read as follows:

"'8 (bis). The Commission shall establish a special commission on the problems which would be encountered by developing land-based producers likely to be most seriously affected by the production of the Area and entrust to it the functions referred to in paragraph 5 (i).'"; 21/

(c) The delegations of Belgium, France, Germany, Federal Republic of, Italy, Japan, United Kingdom of Great Britain and Northern Ireland and the United States of America proposed the following amendments:

"Article 151, paragraph 4: redraft the text as follows:

"'4. Following the recommendations from the Council on the basis of advice from the Economic Planning Commission, the Assembly shall establish a system of measures of economic adjustment assistance including co-operation with specialized agencies and other international organizations to assist developing countries ...'";

"Article 162, paragraph 2 (m): redraft the text to read as follows:

"'(m) To adopt on the basis of the report of the Economic Planning Commission for programmes of adjustment assistance as provided in article 151, paragraph 4.'" 22/

38. Following consultations undertaken by the President and the Chairman of the First Committee on amendments to part XI of the draft Convention and the draft resolution I on the Preparatory Commission, the President of the Conference indicated that the amendments of the Group of 77, dealing with a system of compensation and/or a compensation fund, among other amendments, could be recommended for incorporation in the draft Convention and in draft resolution I.

39. On 30 April 1982 the United Nations Convention on the Law of the Sea and resolutions I-IV of the Conference were adopted by a vote of 130 to 4, with 17 abstentions. The relevant provisions of the Convention and resolutions I and II dealing with a system of compensation and/or a compensation fund as adopted embodied the amendments of the Working Group of 21 and those of the Group of 77. These provisions were subsequently modified as a result of the resumed eleventh session, which was convened to process the recommendations of the Drafting Committee.

40. The provisions of the Convention and resolution I are reproduced in paragraph 4 in the Introduction to the present working paper.

Notes

1/ For the sake of convenience the words "Sea-Bed Committee" are used to cover both the Ad Hoc Committee (1967-1968) and the Committee on the Peaceful Uses of the Sea-Bed and the Ocean Floor beyond the Limits of National Jurisdiction (1968-1973).

2/ A/AC.138/36.

3/ A/AC.138/SC.I/SR.13, pp. 170-177, statement by the representative of the U.S.A.; A/AC.138/SC.I/SR.19, p. 250; statement by the Congo.

4/ A/AC.138/73.

5/ A/AC.138/SC.I/SR.47, p. 226, statement by the representative of Brazil; A/AC.138/SC.I/SR.49, p. 16, statement by the representative of Chile.

6/ A/AC.138/SC.I/L.23, statement made on 5 April 1973 at the 68th meeting by the Chairman of Sub-Committee I, p. 4; A/AC.138/SC.I/SR.74, statement by the representative of Chile, p. 3.

7/ Official Records of the Third United Nations Conference on the Law of the Sea, vol. II (United Nations publication, Sales No. E.75.V.4), First Committee, 12th meeting, para. 10; 13th meeting, paras. 30, 46 and 55.

8/ Ibid., vol. IV (United Nations publication, Sales No. E.75.V.10), document A/CONF.62/L.12/Rev.1.

9/ Ibid., vol. V (United Nations publication, Sales No. E.76.V.8), document A/CONF.62/WP.8/Rev.1.

/...

Notes (continued)

10/ Ibid., vol. VIII (United Nations publication, Sales No. E.78.V.4), document A/CONF.62/WP.10.

11/ Ibid., vol. VI (United Nations publication, Sales No. E.77.V.2), document A/CONF.62/L.12/Rev.1.

12/ Ibid., vol. X (United Nations publication, Sales No. E.79.V.4), document A/CONF.62/62.

13/ The Drafting Committee of the Conference had recommended that the phrase "developing States" should replace "developing countries"; see Official Records of the Third United Nations Conference on the Law of the Sea, vol. XII (United Nations publication, Sales No. E.80.V.12), document A/CONF.62/L.40.

14/ This was an informal negotiating group set up during the eighth session comprising representatives from both developing and industrialized States. Its purpose was to consider the most controversial issues in part XI of the negotiating text and the corresponding annexes.

15/ Official Records of the Third United Nations Conference on the Law of the Sea, vol. XIV (United Nations publication, Sales No. E.82.V.2), summary records of meetings, plenary meetings, 135th meeting, paras. 99-110 and 148-152; 136th meeting, paras. 75-85.

16/ Ibid., 138th meeting, paras. 92-110; First Committee, 49th meeting, paras. 57-63.

17/ Ibid., vol. XVI (United Nations publication, Sales No. E.84.V.2), summary records of meetings, plenary meetings, 161st meeting, paras. 132-141; 162nd meeting, paras. 25-42.

18/ Ibid., 159th meeting, paras. 101-113.

19/ Ibid., 164th meeting, paras. 68-97.

20/ Ibid., document A/CONF.62/L.97.

21/ Ibid., document A/CONF.62/L.116.

22/ Ibid., document A/CONF.62/L.121.

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LOS/PCN/SCN.1/WP.11
16 July 1987

ORIGINAL: ENGLISH

PREPARATORY COMMISSION FOR THE
INTERNATIONAL SEA-BED AUTHORITY
AND FOR THE INTERNATIONAL
TRIBUNAL FOR THE LAW OF THE SEA
Special Commission 1
New York, 27 July-21 August 1987

THE WORK OF SPECIAL COMMISSION 1

Summary by the Secretariat

INTRODUCTION

1. Special Commission 1 is mandated to undertake studies on the problems which would be encountered by developing land-based producer States (DLBPS) likely to be most seriously affected by the production of minerals derived from the international sea-bed Area with a view to minimizing their difficulties and helping them to make the necessary economic adjustment, including studies on the establishment of a compensation fund, and submit recommendations to the International Sea-Bed Authority thereon.

2. The broad topic and the purpose of the studies are defined in the above mandate and it is the understanding of the Special Commission that "the recommendations will be the end results of its work". (LOS/PCN/L.2, para. 2) "In studying the problems of DLBPS, it is necessary to know, first, which minerals would be produced from sea-bed sources; second, how the introduction of the minerals from this new source would affect the existing land-based sources; third, what would these effects be and which developing States would be affected; fourth, what problems or difficulties in connection with these effects, these developing States would encounter; and finally, what could be done to minimize these difficulties." (LOS/PCN/L.2, para. 2; see also LOS/PCN/SCN.1/1985/CRP.5, p. 2) This logically structured framework led to the adoption of a programme of work by the Special Commission at its first meeting (contained in LOS/PCN/SCN.1/1984/CRP.2), which was later elaborated by including a list of issues under each of the items contained in it (LOS/PCN/SCN.1/1984/CRP.3).

3. After it had commenced its work, the Special Commission held a total of 57 meetings, and its Bureau held 20 open-ended meetings (open to all members of the

Special Commission) during the second to fifth sessions (March-April 1984, 1985, 1986 and 1987) and the three meetings (August-September 1984, 1985 and 1986) of the Preparatory Commission. In addition to the relevant documents of the Third United Nations Conference on the Law of the Sea and other documents of the Preparatory Commission, it had before it 10 working papers with 6 addenda, and 12 conference room papers with 1 addendum (see annex). (In the present paper such documents will be referred to in their "short" forms, i.e., "W.P.1" will be taken to mean document LOS/PCN/SCN.1/WP.1; "CRP.1" will stand for LOS/PCN/SCN.1/1984/CRP.1, and so forth.)

4. At the conclusion of the last session of the Preparatory Commission, the Chairman of Special Commission 1 stated that "our work has come to a stage where, for the sake of easy reference as well as facilitating the basis of our recommendations to the Authority, the need is acutely felt for making an inventory or taking stock of the tasks already accomplished and the results achieved. Such a need was expressed in the Chairman's report at the conclusion of the last New York meeting. It is my intention to respond to that need through a paper prepared with the assistance of the Secretariat." (LOS/PCN/L.44, para. 19) The present document has been prepared by the Secretariat pursuant to that statement.

5. Since the need was expressed to see the status of work accomplished and results achieved under each item in CRP.2 and CRP.3, the present document is structured according to these items. However, although for the sake of convenience a division has been made according to the items, the interrelated nature of the items should be kept in mind. Under each item, a synopsis is presented about the work accomplished; where deemed helpful, brief summaries of delegations' views on broad issues are included; and finally, the areas of agreement or "common grounds" that emerged during the deliberations are listed. It should be emphasized that in the preparation of this document the Secretariat relied almost exclusively on the statements to the plenary by the Chairman of Special Commission 1 on the progress of work in that Commission during the relevant sessions and meetings of the Preparatory Commission, and on other statements of the Chairman (especially CRP.8 and CRP.9). (For a list of these statements, see annex. Hereinafter the statements to the plenary will be referred to by their "short" forms, i.e., "L.2" will stand for document LOS/PCN/L.2, and so forth.) References to these statements have been included throughout the document; in some cases, as necessary, working papers and other conference room papers have been referred to.

6. With respect to the "areas of agreement", the Special Commission may wish to consider whether in certain cases, although the matter pertains specifically to the work of the Special Commission, it can form the basis of its recommendations to the Authority.

/...

WORK OF SPECIAL COMMISSION 1

Item 1. Projection of production from the Area

Work accomplished

7. The issues under this item were addressed during the "broad-ranging discussion on the overall subject-matter within the mandate of the Special Commission" as well as in connection with deliberations on other items. The relevant documentation is WP.1, paragraphs 3 and 4, WP.2, paragraphs 7 and 8 and CRP.11, paragraph 2.

Views of the delegations

8. As to the timing of future sea-bed production, in the opinion of some delegations, "it was now widely accepted that deep sea-bed mining was not likely to take place in the immediate future, given that the now prevailing low level of prices of the metals to be extracted did not render such activity economically viable. As a consequence, it was difficult, in their view, to predict when, and under what circumstances, the first commercial exploitation of the deep sea-bed would take place." (L.37, para. 16; also see CRP.11, para. 2) "However, based on the findings of a report by the National Oceanic and Atmospheric Administration (NOAA) of the Government of the United States of America that commercial sea-bed mining could be competitive with land-based mining beyond the current decade and the sense of urgency expressed by NOAA to prepare draft regulations that would enable it to issue licences for commercial deep-sea mining after 1 January 1988, some delegations expressed the view that sea-bed mining might not be distant." (L.37, para. 17)

Areas of agreement

9. "One of the most significant achievements during the [third] session is a better understanding of the nature and content of the studies that can and should be carried out in the next few years before the Authority comes into being, and of the studies that can be more effectively pursued by the Authority and its appropriate organs in due course, in view of the relatively long period that may be required before sea-bed production occurs." (L.18, para. 3, underlining added)

10. In this context (related to items 1.2 (ii), 1.2 (iii) and 2),

> "... There was a general agreement that ... forecasting of the mineral situation with and without sea-bed production ... can be carried out by the Authority in due course." (L.18, para. 4)

11. With regard to effects of sea-bed production on DLBPS (related to item 3) and problems that would be encountered by the affected DLBPS (related to item 4), the following area of agreement should be noted:

/...

> "A thorough assessment of the effects of sea-bed production and the problems encountered by particular DLBPS, on a country-by-country basis as well as a mineral-by-mineral basis, can be undertaken when sea-bed production occurs." (L.18, para. 4) "[The Special Commission] can study, in general terms, what the possible effects of sea-bed production would be and the possible problems that could be encountered by such States flowing from these effects; it can recommend to the Authority an outline of the in-depth investigation the Authority may carry out on specific countries and specific minerals with regard to the effects and the associated problems ..." (*ibid*., para. 5).

12. Furthermore, on the issue of which developing States would be affected (related to item 3),

> "there was a general agreement that ... a final identification of DLBPS likely to be most seriously affected by sea-bed production ... can be carried out by the Authority in due course" (L.18, para. 4). "The Special Commission, however, can formulate criteria that may be used in identifying DLBPS likely to be most seriously affected ..." (*Ibid*., para. 5).

13. With regard to remedial measures to minimize the difficulties of DLBPS (related to item 5),

> "there was general agreement that ... concrete formulation of measures to minimize the difficulties of DLBPS and to help them make the necessary economic adjustment can be carried out by the Authority in due course" (L.18, para. 4). "[The Special Commission] can recommend certain guidelines for the concrete formulation of remedial measures." (*Ibid*., para. 5)

14. On the question whether the Special Commission should study, in addition to polymetallic nodules, other minerals (item 1.2 (i)), the following area of agreement should be noted:

> The Special Commission should concentrate "its work on polymetallic nodules, at the same time keeping in view the trends and developments regarding minerals other than polymetallic nodules, for example, polymetallic sulphides, cobalt-rich manganese crusts, etc." (L.2, para. 5; see also CRP.8, para. 4 (c))

15. On the question whether the Special Commission should deal with each of the 50 or so minerals contained in polymetallic nodules or should limit itself to the minerals which appear to be economically exploitable (item 1.2 (i)),

> "there was a general agreement that the Special Commission, at this time, should concentrate on copper, nickel, cobalt and manganese, but it should keep in view the trends and developments regarding the other minerals." (L.2, para. 5; see also CRP.8, para. 4 (d))

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Item 2. Assessment of relationship between production from the Area and existing land-based production

Work accomplished

16. The general discussion was followed by an examination of a background paper, WP.4. Documents WP.1, paragraphs 8-13; WP.2, paragraphs 9-43; and CRP.9 are also relevant. "It was felt that the study of the aggregate situation [in the world mineral market with and without sea-bed production] may be helpful in assessing price and volume of trade in the global context, but what is important is to study the supply-demand situation as pertaining to the individual land-based producer States." (L.18, para. 9) "An important point was raised that a considerable part of the mineral trade may be carried out through specific trade agreements. A study of the terms and conditions of these trade agreements may be more fruitful than the study of the operation of the invisible forces of the mineral market." (L.18, para. 9)

17. "After sea-bed production occurs, the observed price of a mineral and volume of exports of that mineral from DLBPS may incorporate effects of other factors than sea-bed production itself ... The effects of these factors need to be taken into account in order to isolate the effects of sea-bed production *per se*." (L.23, para. 7 (a); see also L.44, para. 15) The discussion focused on what these factors might be, and how the framework of assessment should incorporate capabilities of isolating the effects of sea-bed production from the effects of these factors.

Areas of agreement

18. With regard to the question whether the Special Commission should assess the relationship between production from the Area and existing land-based production on a mineral-by-mineral basis (item 2.1 (i)),

> "it was generally agreed that a mineral-by-mineral assessment is the most appropriate one." (L.2, para. 5)

19. Concerning the framework of assessment of the relationship between production from the Area and existing land-based production (item 2.2 (ii)),

(a) "it was generally felt that the framework of assessment has to be essentially a long-term one, on an ongoing basis; however, short-term and medium-term frameworks should also be kept under consideration." (L.2., para. 5)

(b) "[there was general agreement that] transactions in both so-called "open market" and "controlled market" should be taken into account. The extent to which a particular DLBPS carries out trade in open market and controlled market has to be determined." (CRP.9, para. 4 (g))

20. With regard to the issue of isolating the effects of sea-bed production from those of other factors on price and volume of exports of a mineral (item 2.1 (iii)), the following area of agreement should be noted:

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"An effective way of addressing the issue would be for the Authority to establish mechanisms for continuing study of the minerals concerned, and for collecting the relevant data and information." (L.44, para. 17)

21. As to the methodology of isolating the effects of sea-bed production (item 2.1 (iii)), the following areas of agreement should be noted:

(a) "There was no agreed methodology yet to determine the extent of reduction in the price of an affected mineral or in the volume of exports of that mineral caused by sea-bed production. The Authority will have to devise an agreed methodology." (CRP.9, para. 4 (e))

(b) "In devising the methodology, the Authority will have to take into account other factors that may have an effect on price or volume of exports of the minerals concerned, e.g.: (i) general economic conditions in the DLBPS concerned, (ii) situation in the metal market, (iii) supply from and cost of production of metals from other sources, e.g., newly developed deposits on land, marine minerals within national jurisdiction, (iv) technological development, (v) substitution." (CRP.9, para. 4 (f); see also L.44, para. 16)

(c) "A study of the bilateral trade arrangements can establish the cause-and-effect relationships in a relatively direct manner." (CRP.9, para. 4 (g))

Item 3. Identification, definition and measurement of effects on developing land-based producer States

Work accomplished

22. There were extensive discussions on this item. The initial document was WP.1, paragraphs 14-17; later, WP.3, WP.4, WP.6, WP.7, CRP.8, CRP.9 and CRP.11 addressed the item. With respect to adverse effects, "the possibility was mentioned of an over-supply of the mineral commodities concerned as a result of sea-bed supply, and a resultant reduction in price; the possibility was also mentioned of the import needs of consuming countries being fulfilled by sea-bed supply, with a resultant reduction in the volume of exports of developing land-based producers to these consuming countries. The reduction in price of a mineral or volume of exports may cause a reduction in export earnings or adverse effects on economies of DLBPS". (L.18, para. 8)

23. In connection with the identification of effects, the discussion focused on the identification of affected DLBPS. In this context, "the discussion had combined two matters: identification of DLBPS which would be actually affected ex post after sea-bed mining occurs and the identification of DLBPS which would be likely to be most seriously affected". (CRP.8, para. 3) Of course, "the issue of ex ante identification prior to sea-bed production of DLBPS likely to be most seriously affected by sea-bed production was interrelated with the issue of ex post effects of sea-bed production on DLBPS after sea-bed production occurs". (L.18, para. 7) "In this connection it should be borne in mind that ex ante identification is for the purpose of studying the problems that may be encountered

and of exploring possible solutions alone; the ex ante identification is not for the purpose of establishing eligibility for assistance from the Authority." (L.18, para. 7; see also CRP.8, para. 12) The discussion on identifying affected DLBPS ex post and DLBPS likely to be affected ex ante centred around criteria to be used in identification, quantifiable yardsticks to be applied reflecting the criteria, and the values of quantifiable yardsticks to be compared with threshold levels to arrive at conclusions.

24. Once the effects have been identified, "it is also necessary to define what can be called 'serious effects' in the context of the provisions of articles 151 (10) and 150 (h) which address the matter of assisting developing countries which suffer serious adverse effects on their export earnings or economies ..." (L.44, para. 14; see also CRP.9, para. 6). A similar approach involving the application of quantifiable yardsticks and threshold levels of quantifiable yardsticks can be helpful in both the cases - identifying DLBPS likely to be most seriously affected ex ante and identifying DLBPS most seriously affected ex post (see L.44, para. 18).

Views of the delegations

25. Some delegations which emphasized the uncertainty about when and under what circumstances the first commercial exploitation of the deep sea-bed would take place were of the opinion that "the uncertainty ... makes it very difficult, if not impossible, to arrive at any specific conclusions at this stage which could be of value to the Authority at a time when deep sea-bed mining is actually taking place. In particular, it should not be assumed that land-based producers will suffer any serious adverse effects." (CRP.11, para. 3)

26. "Some delegations were of the view that DLBPS may not be seriously affected by sea-bed production, if sea-bed production takes place on an unsubsidized commercial basis, because the very factors that would encourage unsubsidized commercial sea-bed mining, e.g., increased metal demand, higher metal prices, etc., would at the same time be helpful to land-based mining". (L.44, para. 9; see also L.37, para. 17) Some delegations, however, expressed the view that "strategic and security-of-supply considerations would make subsidization very likely". (L.37, para. 17)

Areas of agreement

27. With regard to the effects (item 3.2), in conformity with the provisions of articles 150 (h) and 151 (10),

(a) "there was general agreement that ... the effects of sea-bed production in the Area that would be studied will be those on export earnings or economies of DLBPS". (CRP.9, para. 4 (a); see also L.9, para. 4)

(b) "there was general agreement that ... the effects have to result from a reduction in the price of an affected mineral or in the volume of exports of that mineral, to the extent that such reduction is caused by the exploration for, and exploitation of, the resources of the Area." (CRP.9, para. 4 (b); see also L.9, para. 4)

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28. On the question of whether the effects of production in the Area should be considered on a State-by-State basis (item 3.2 (i)),

> "it was deemed most relevant to give consideration on a State-by-State basis." (L.2, para. 5)

29. With regard to the measurement of the effects (items 3.2 (i), (ii) and (iii)),

(a) "it was generally agreed that the effects on export earnings and economies of a DLBPS should be quantified, to the greatest possible extent. While it was felt that it may be relatively easy to quantify the effects on export earnings, utmost effort should be made as well to quantify the effects on economies." (CRP.9, para. 5 (a); see also L.18, para. 9)

(b) "it was generally agreed that ... with regard to effects on economies, various factors should be taken into consideration such as: (i) direct reduction in the income of the DLBPS, (ii) unemployment, (iii) foreign exchange unavailability, (iv) reduced government revenues and investible funds for development, (v) so-called side effects, e.g., reduced production of accessory minerals, and (vi) multiplier effects reflecting the linkages of the mineral sectors concerned with other sectors." (CRP.9, para. 5 (b); see also L.18, para. 8)

In addition, the following area of agreement should be noted:

(c) "The measurement of actual effects should be done only after sea-bed production occurs ..." (L.18, para. 10)

30. On the issue of the identification of DLBPS likely to be affected by sea-bed production (items 3.2 and 3.3), the following areas of agreement should be noted:

(a) "Before actually identifying DLBPS likely to be most seriously affected, we should first decide on the criteria for such identification. This is different from the actual identification itself." (CRP.8, para. 4; see also L.18, para. 5, and para. 12 (a) above)

(b) "In conformity with the provisions of articles 150 (h) and 151 (10), we agreed that the criteria would be related to export earnings or economies of DLBPS. The main idea is to see how dependent a DLBPS is on copper, nickel, cobalt and manganese for its export earnings or for its economy." (CRP.8, para. 5; see also L.18, para. 6)

(c) "The most practical way of identifying land-based producer States that might be most seriously affected is on the basis of relevant statistics." (L.9, para. 5)

(d) "We also agreed that quantifiable yardsticks related to the criteria could be used." (CRP.8, para. 5)

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(e) "With regard to the criteria of export earnings or economies, several quantifiable yardsticks could be used: (i) absolute value of exports of the four minerals ...; (ii) absolute value of export earnings in relation to total export earnings ...; (iii) absolute amount of production of these four minerals ...; (iv) value of production in relation to total Gross Domestic Product or total Gross National Product ...; (v) value of export earnings from the four minerals in relation to the economy ...; (vi) some combination of various quantifiable yardsticks related to export earnings and those related to economies ..." (CRP.8, para. 6; see also L.9, paras. 6-10)

(f) "The yardsticks should be properly measured statistically." (CRP.8, para. 7)

(g) "The quantifiable yardsticks may have to be expressed in terms of a formula." (CRP.8, para. 9)

(h) "The idea of a 'threshold' level of a given yardstick could be used for the purpose (of categorizing the DLBPS that are likely to be 'most seriously affected' by sea-bed production)" (L.9, para. 11) "These 'threshold' levels could vary taking into account certain factors (production capabilities of a particular State for one or more of the four minerals concerned, projected future production, reserves, gross national product (GNP) and per capita income, population, size of the area of the particular State, and geographical location of the State)". (L.9, para. 11; see also L.9, para. 17)

(i) "With regard to the issue of the concrete formulation of the criteria for the identification of DLBPS likely to be most seriously affected by sea-bed production, the suggestions of the Chairman contained in CRP.8 are broadly acceptable to the Special Commission, although further work may be required to finalize the figures mentioned in paragraph 6 of the document, in connection with the quantifiable yardsticks, and some degree of flexibility may need to be introduced in paragraph 6 (f)." (L.37, para. 3; see also L.23, paras. 4 and 5 (c), and L.44, para. 2)

31. With regard to the timing of the identification of DLBPS likely to be most seriously affected,

(a) "There was a general agreement that a final identification of DLBPS likely to be most seriously affected by sea-bed production can be carried out by the Authority in due time." (CRP.8, para. 1; see also L.18, para. 4, and para. 12 (a) above)

(b) "There was also a general agreement that this final identification will be done at a time rather close to the time of the earliest commercial production from the sea-bed in the Area." (CRP.8, para. 2; see also L.9, para. 14)

In addition, the following areas of agreement should be noted:

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(c) "DLBPS which would be likely to be seriously affected by sea-bed production in the Area would be in a better position to bring to the attention of the Authority this fact at a time close to when sea-bed production would actually occur." (L.23, para. 5 (a))

(d) "The Authority could apply the criteria to identify such States; however, the situation of each land-based producer State will have to be studied on a case-by-case basis." (L.23, para. 5 (a))

(e) "In studying each case, the Authority will have to assess the extent to which the export earnings or the economy of a particular DLBPS depend on the relevant mineral prior to sea-bed production in the Area." (L. 23, para. 5 (a))

(f) "This assessment may have to be carried out on the basis of level of dependence during the previous five years before production authorizations are issued to sea-bed miners, or on the basis of a long-term trend between, say, 1982, the year the Convention was adopted, and the year in which production authorizations are issued." (L.23, para. 5 (a))

(g) "The level of dependence needs to be looked into from an overall perspective, rather than in a fragmentary approach. In this context, the role and contribution of the mineral sectors concerned in the economies of DLBPS need to be examined in its totality." (L.23, para. 5 (b))

(h) "The role and contribution of the mineral sectors concerned may vary from State to State depending on a number of factors, e.g., population, per capita income, geographical location, area, etc.; these need to be taken into account on a case-by-case basis." (L.23, para. 5 (b))

(i) "While the final identification can be carried out by the Authority in due time, it was also agreed that some kind of preliminary identification at present or in the very near future could be done." (CRP.8, para. 3; also see L.23, para. 5 (e))

Item 4. Determination of the problems/difficulties that would be encountered by the affected developing land-based producer States

Work accomplished

32. The item was addressed in the course of the general discussion and more intensively, in combination with the discussion on effects of sea-bed production and on remedial measures. Documents WP.1, paragraphs 18-27, WP.3, WP.4, WP.6, WP.7 and CRP.9 are directly relevant to this item.

33. While the adverse effects by themselves may be considered problems, "the problems of DLBPS would arise, to a great extent, from the limitations of capabilities of such States in countering and controlling the effects of sea-bed production on their export earnings or economies. These limitations need to be

addressed thoroughly, and any long-term remedy has to address the issue of alleviating these limitations." (L.23, para. 7 (b); see also CRP.9, para. 7) "The extent of the limitations may vary from State to State, depending on various factors, and this needs to be studied by the Authority." (CRP.9, para. 7) The underlying real problems of diverting resources from the mineral sectors concerned to other sectors quickly and smoothly, and why the adverse effects of sea-bed production would cause more problems to DLBPS as compared to other land-based producers, need to be studied (see L.18, para. 8).

34. "On a procedural matter, according to the provisions in article 151 (10) of the Convention, the Authority shall initiate studies on the problems of DLBPS on request from such States. According to article 164 (2) (c), the Economic Planning Commission (EPC) of the Authority shall examine any situation likely to lead to adverse effects, brought to its attention by the State Party or States Parties concerned. It can be assumed that the process of bringing to the EPC's attention will start when a particular land-based producer State would submit pertinent information, data and analysis. The initial submission would be examined by the EPC, while the final findings, it can be assumed, will be the results of joint and agreed investigation by the Authority and the State Party concerned." (CRP.9, para. 8; see also CRP.9, para. 9)

Areas of agreement

35. The following areas of agreement should be noted:

(a) "While the Special Commission can study, in general terms, the possible effects of sea-bed production on DLBPS and the possible problems that could be encountered by such States flowing from these effects, the in-depth studies themselves and the thorough assessments of the effects of sea-bed production in the Area on DLBPS, and the associated problems, should be undertaken by the Authority when sea-bed production occurs in the Area." (CRP.9, para. 3 (a); see also L.18, paras. 5 and 4, and para. 11 (a) above)

(b) "These studies will be undertaken on a case-by-case basis. The cases will pertain to particular DLBPS and particular minerals. In this context, it was generally felt that at this time a generalized case study with broadly defined parameters and hypothetical data may be of limited use only." (CRP.9, para. 3 (b); see also L.18, para. 4, and para. 11 (a) above)

(c) The Special Commission, however, can prepare an outline of the in-depth investigation that could be carried out by the Authority." (CRP.9, para. 3 (c); see also L.18, para. 5, and para. 11 (a) above)

(d) With regard to the issue of the preparation of an outline to study in-depth possible effects of sea-bed production in the Area on DLBPS and to investigate the associated problems, the suggestions of the Chairman contained in CRP.9 are broadly acceptable to the Special Commission. (L.37, para. 4)

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Item 5. Formulation of measures to minimize problems/difficulties of affected developing land-based producer States

Work accomplished

36. The Special Commission had general discussion on the remedial measures in connection with the deliberations on related matters. The initial document was WP.1, paragraphs 28-42. Following that, based on the understanding that the existing economic measures of international and multilateral organizations can be of relevance to its work, the Special Commission examined about 60 existing measures, programmes or activities, being implemented or developed under the auspices of international, multilateral, regional or subregional organizations both of an intergovernmental and a non-governmental nature. The Secretariat prepared four working papers for this purpose: WP.2/Add.2; WP.5 (incorporating the contents of WP.2/Add.2); WP.5/Add.1; and WP.5/Add.2. The Special Commission also heard presentations from representatives of several organizations, describing their respective measures. In order to facilitate the discussion in specific terms the Chairman, with the assistance of the Bureau, prepared a summary of the vast amount of information contained in WP.5. The summary presented an inventory of all the measures, programmes or activities focusing on the points in each paper that could make it relevant to the solution of the problems of DLBPS. The summary is contained in CRP.10. The Special Commission had two documents on a system of compensation and/or compensation fund, WP.9 and WP.10. In addition, Pakistan, Zimbabwe, the group of Eastern European socialist countries and the Group of 77 made specific proposals regarding remedial measures; these proposals are contained in CRP.6, CRP.7, WP.8 and CRP.12, respectively.

Views of the delegations

37. Those delegations which were of the opinion that because of the uncertainty about when and under what circumstances the first commercial exploitation of the deep sea-bed would take place it should not be assumed that land-based producers will suffer any serious adverse effects (see para. 23. above) also expressed the view that "for the same reasons it would be premature to recommend specific remedial measures at this stage". (CRP.11, para. 4; see also L.31, para. 12 and L.37, para. 16)

38. "Some delegations exphasized the measures already included in the Convention, e.g., the production ceiling provisions contained in article 151, paragraphs 4-7, the provisions with regard to safeguards against unfair market practices and regarding conditions of access to markets, and implicitly, regarding market transparency, in article 151, paragraph 10, and article 150, paragraph (j), respectively." (L.31, para. 12)

39. On the issue of whether the Authority should adopt any remedial measure of its own, some delegations were of the view that "the application of existing instruments to assist efforts of economic adjustment in developing countries which were land-based producers could well prove adequate and more justifiable than the creation of new instruments". (L.37, para. 16; see also L.44, paras. 3 and 9, and CRP.11, para. 7) "A view was expressed that when sea-bed mining becomes a reality,

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the international and multilateral organizations themselves might adapt their measures, programmes and activities to take into account the problems of DLBPS, thus reducing the need for the Authority to adopt its own measures." (L.31, para. 12) Some delegations felt that "if [existing economic measures] prove to be inadequate after careful study, then assistance should be provided by the Authority". (L.44, para. 9; see also L.44, para. 3) "Other delegations were of the view that it is necessary that the Authority adopts its own measures." (L.44, para. 3); see also L.18, para. 11; L.31, para. 12; and L.37, para. 17)

40. "A number of delegations felt that the Preparatory Commission as an intergovernmental body could make efforts, taking appropriate decisions, to contact the policy-making organs of the international and multilateral organizations concerned so that their existing measures, programmes and activities take into account the possible problems of DLBPS likely to suffer adverse effects as a result of sea-bed production. This is intended to enhance the degree of applicability of these measures, programmes and activities to the problems the Special Commission is addressing. Other delegations pointed out the difficulties that may be encountered in this endeavour in view of how the policy-making organ of each organization works and what its mandate is. Some delegations suggested that DLBPS themselves, or members of the Preparatory Commission, could make efforts to the same effect in the respective forums of the intergovernmental or multilateral organizations, as applicable. Some delegations, while accepting CRP.10 in its present context, mentioned that there should not be any prejudgement of their countries' positions in the respective forums." (L.31, para. 7)

41. "As to whether the Authority should adopt a system of compensation or measures of economic adjustment assistance, according to some delegations a system of compensation is not effective in solving the problems of DLBPS; measures of economic adjustment assistance can address the problems far more effectively. Other delegations were of the view that a system of compensation and/or a compensation fund is not only effective, it is essential for tackling the problem of DLBPS." (L.44, para. 4)

42. Focusing on compensation, "some delegations were of the view that it was mandatory for the Authority that a system of compensation and a compensation fund should be established. Some delegations expressed the opposite view. Some delegations were of the view that, mandatory or not, the option of a system of compensation and a compensation fund was a specifically mentioned option, and also a priority option to be given preference or importance. Still others expressed the view that, mandatory or not, the option of a system of compensation and a compensation fund should not be excluded from consideration. On the other hand, some delegations were of the view that such a system and such a fund were not needed". (L.37, para. 12)

43. "Some delegations held the view that the establishment of a compensation system necessarily means the establishment of a compensation fund. Some others were of the view that there can be ways of compensating DLBPS without creating a compensation fund." (L.44, para. 5)

44. "As to the issue whether a system of compensation and/or a compensation fund should be a universal, multilateral or bilateral one, some delegations were of the view that it has to be a universal or multilateral one. Others held the view that a bilateral mechanism operative, under the auspices of the Authority, between a developing traditional exporter of an affected mineral and a State producing a similar mineral from the resources of the Area, which had traditionally imported that mineral from the former, is the most preferable one." (L.44, para. 6)

45. "Regarding the establishment of a compensation fund, a view was held by some delegations that the issue of a compensation fund is not just a juridical one, it is essentially an economic issue. From the economic point of view a compensation fund is not viable, especially in view of the current world economic realities and the long-term nature of the problems of the world mineral industry. Others maintained that there can be ways of making a compensation fund viable." (L.44, para. 7)

46. "If a compensation fund is to be established, one of the crucial issues is the sources of finances for that fund. A number of ideas were offered by delegations. The Group of 77 proposal in CRP.12 envisages a percentage of profits of the Enterprise, plus a percentage of profits of other operators in the Area, plus voluntary contributions to be the sources of finances. Some delegations felt that contributions by operators may impose an additional burden on them considering the high costs of sea-bed mining. Besides, some land-based producing countries which are not developing countries may already be adversely affected by sea-bed mining; in addition to their losses in land-based mining, their contributions to the compensation fund will be extremely burdensome. Those delegations preferred contributions by the Enterprise alone, or voluntary contributions alone, or a combination of the two. Others pointed out that the contributions by the operators would be from the profits, and thus would not add to costs and would not be burdensome. Furthermore, when operators earn "super-profits", contributions coming from the super-profits are not burdensome at all. In addition, the experience of existing funds the sole sources of finances for which are voluntary contributions has not been encouraging" (L.44, para. 8)

Areas of agreement

47. With regard to remedial measures (items 5.1-5.5), the following areas of agreement should be noted (see also para. 13 above).

(a) "There was a general agreement that when sea-bed production occurs, if in fact DLBPS are seriously affected, their difficulties should be minimized and they should be helped to make the necessary economic adjustment." (L.44, para. 9)

(b) "Any remedy or assistance administered by the Authority may have to be based on a thorough examination of the effects and the problems on a case-by-case basis; the conditions of specific mineral industries in specific countries should be assessed." (L.18, para. 10)

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(c) "Whatever term is used - 'system of compensation' or 'measures of economic adjustment assistance' - what is important is that assistance is provided to seriously affected DLBPS. In fact, compensation for adverse effects or economic adjustment assistance for adjusting to adverse effects can achieve the same objective. Some proposed measures can be considered to be compensatory ones from one point of view, and can be termed as measures of economic adjustment assistance from another." (L.44, para. 10)

(d) "Any remedial measure - system of compensation or measure of economic adjustment assistance - will involve finances, either directly, or indirectly because of implicit costs of goods and/or services provided for the assistance of seriously affected DLBPS." (L.44, para. 10)

(e) "It was generally maintained that, if a commodity focus is adopted, commodity agreements based on international co-operation among producers and consumers were the most preferable measures." (L.9, para. 26)

48. With regard to existing economic measures (items 5.1 (ii), 5.2 (ii), 5.4 and 5.5), the following areas of agreement should be noted:

(a) "Almost all [of the existing] measures, programmes or activities could be of relevance [to the work of Special Commission 1] in various degrees. (L.31, para. 5)

(b) "There was a general agreement that the measures, programmes or activities, in their current form as listed in CRP.10, could be useful to a certain degree in minimizing the difficulties of DLBPS likely to suffer adverse effects as a result of sea-bed production." (L.31, para. 8)

(c) "CRP.10 was generally acceptable as a listing of ... measures, programmes or activities being implemented or developed by international or multilateral organizations, which could be made use of in remedying the problems that may be encountered by DLBPS as a result of future sea-bed production." (L.31, para. 6) However, "it should be pointed out that CRP.10, since it is based on WP.5, is not comprehensive." (L.31, para. 8) "It should be added that CRP.10 does not indicate any preference or priority for any given measure, programme or activity." (L.31, para. 9) "CRP.10 does not assess the degree of relevance or effectiveness of the measures, programmes or activities for remedying the problems of DLBPS." (L.31, para. 9) "Another limitation of CRP.10 is that it does not assess the degree of facility, or conversely, the degree of difficulty involved for DLBPS in utilizing the existing measures, programmes or activities." (L.31, para. 10)

(d) "It was generally agreed that CRP.10, further enriched by information on additional existing measures, programmes or activities, and taking into account the analytical assessments, can form a good basis for further deliberations for the Special Commission's recommendations to the Authority with regard to guidelines for remedial measures." (L.31, para. 12)

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(e) "The delegations as well as the Secretariat should be alert to any developments in the international and multilateral fora with regard to economic measures that could be of relevance to the [work of Special Commission 1]." (L.9, para. 30)

(f) "CRP.10 can be helpful in formulating guidelines for appropriate co-operative arrangements (between the Authority and specialized agencies and other international organizations)." (L.31, para. 12)

(g) "Different elements [of the three proposals, by Pakistan, Zimbabwe and the group of Eastern European socialist countries, respectively], in one way or another, were similar to elements in the existing measures, although these proposals are specifically focused on the problems of DLBPS. There were also similarities with regard to some elements among the three proposals themselves. It appears that a matrix composed of similar elements is emerging, which could be relevant for the recommendations of the Special Commission to the Authority with regard to remedial measures for the possible problems of DLBPS." (L.31, para. 14; see also L.37, para. 10)

(h) "Assistance to seriously affected DLBPS will be provided under the auspices of the Authority, and not outside its ambit. Even in the case of existing economic measures, the Authority is mandated, in article 151 (10), to co-operate with specialized agencies and other international organizations". (L.44, para. 12)

49. With regard to a compensation fund (item 5.3),

> "There was general agreement ... that the Special Commission was mandated to undertake studies in the establishment of a compensation fund, whatever the outcome of the studies might be." (L.37, para. 12)

Interrelated nature of the items

Work accomplished

50. The interrelationships among the items are evident in the "integrated, logically structured framework" of CRP.3. The general discussion highlighted the interrelationships; deliberations on specific items were characterized by frequent references to other items. Most of the documents dealt with the items in an interrelated manner.

Areas of agreement

51. The following area of agreement should be noted:

> "The three issues, namely, (i) the criteria for the identification of DLBPS likely to be most seriously affected by sea-bed production in the Area, (ii) the in-depth study of possible effects of sea-bed production in the Area on such States and the investigation of associated problems, and (iii) the formulation of guidelines in devising any remedial or assistance measures, are

interrelated. For the sake of proceeding with our work in a step-by-step fashion, we may come to some tentative agreements on each of these issues separately. However, at a final stage, the separate tentative agreements need to be examined as parts of the whole, in the sense of a 'package', or in a 'global' perspective, so to speak." (L.23, para. 5 (d))

Necessary data and information

Work accomplished

52. "Two things were absolutely essential to form the basis of the work of the Special Commission - a set of relevant information and data and a methodology to process this information and data for the purpose of the Special Commission. It was also apparent that at this time no given set of information and data and no given methodology will serve the purpose; rather, both the tasks of information collection and formulation of methodology will be an ongoing process so that at the time when the Authority needs to act, it will have at its disposal an accumulated set of information and data appropriate for its purpose and a methodology properly tailored to form the basis for timely action by the Authority." (L.2, para. 6; see also L.18, para. 13)

53. "It was ... felt that at this time the Special Commission is not in a position to fix the items on which information and data will be needed. This also has to be an ongoing process ... As a first step, three types of information and data have been identified to be essential: information on the minerals and their markets, production, consumption, exports, imports, direction of trade, price, etc., information on the DLBPS, their production, the significance of the minerals in their economies, and information on the existing international or multinational economic measures which could be of relevance to the work of the Special Commission." (L.2, para. 7) Furthermore, updated information for the "profiles" of the four mineral industries concerned were also considered useful. (see L.2, para. 7) "The data base would be further enriched if data on recycling could be made available to the Special Commission." (L.18, para. 13) "The Secretariat would continue to collect data on recycling, especially of nickel, cobalt and manganese." (L.18, para. 13) In addition, "any information on specific trade agreements, especially of a bilateral nature, if available in the public domain, will facilitate [the Special Commission's] deliberations on the future of the mineral trade." (L.18, para. 13)

54. Information available in the public domain is used by the Special Commission. "The Special Commission also felt that States themselves could be requested through the Secretariat to provide similar and other information and data." (L.2, para. 7)

55. In addition to the information and data contained in other documents, the Special Commission had before it several documents prepared specifically in response to the need for data and information: WP.2, WP.2/Add.1, WP.2/Add.2, WP.2/Add.3, WP.2/Add.4, WP.5, WP.5/Add.1 and WP.5/Add.2. "WP.2/Add.3 presents data on past and present production, consumption and trade of copper, nickel, cobalt and manganese as well as data related to future production potential of these metals

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from land-based sources. These data were collated from the responses of States/entities to the note verbale transmitted to them by the Secretary-General." (L.23, para. 2)

Areas of agreement

56. With regard to the collection, processing and dissemination of statistics (items 2.2 (i) and 3.1 (i)), the following areas of agreement should be noted:

(a) "The usefulness of having timely statistics at the disposal of the Special Commission and, later, of the Authority, was recognized. It was agreed that the collection, processing and dissemination of statistics is an ongoing process." (L.9, para. 15)

(b) "The Secretariat should continue the task [of collection, processing and dissemination of statistics] in the future." (L.9, para. 15)

(c) "The formation of the statistical base for the work of the Special Commission should be based on a two-pronged approach: (1) the Secretariat should continue updating statistics collected from published sources, including national governmental publications and publications of Regional Commissions; and (2) at the same time, the States themselves should transmit to the Secretariat the responses to the note verbale from the Secretary-General, requesting certain statistics." (L.9, para. 16)

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Annex

LIST OF DOCUMENTS

A. Statements by the Chairman on the progress of work

LOS/PCN/L.2 (11 April 1984)
"Statement to the plenary by the Chairman of Special Commission 1 on the progress of work in that Commission"
(Second session, Kingston, Jamaica, 19 March-13 April 1984)

LOS/PCN/L.9 (3 September 1984)
"Statement to the plenary by the Chairman of Special Commission 1 on the progress of work in that Commission"
(Geneva, 13 August-5 September 1984)

LOS/PCN/L.18 (2 April 1985)
"Statement to the plenary by the Chairman of Special Commission 1 on the progress of work in that Commission"
(Third session, Kingston, Jamaica, 11 March-4 April 1985)

LOS/PCN/L.23 (2 September 1985)
"Statement to the plenary by the Chairman of Special Commission 1 on the progress of work in that Commission"
(Geneva, 12 August-4 September 1985)

LOS/PCN/L.31 (10 April 1986)
"Statement to the plenary by the Chairman of Special Commission 1 on the progress of work in that Commission"
(Fourth session, Kingston, Jamaica, 17 March-11 April 1986)

LOS/PCN/L.37 (3 September 1986)
"Statement to the plenary by the Chairman of Special Commission 1 on the progress of work in that Commission"
(New York, 11 August-5 September 1986)

LOS/PCN/L.44 (14 April 1987)
"Statement to the plenary by the Chairman of Special Commission 1 on the progress of work in that Commission"
(Fifth session, Kingston, Jamaica, 30 March-16 April 1987)

B. Working papers

LOS/PCN/SCN.1/WP.1 (28 February 1984)
"General considerations in studying the problems which would be encountered by developing land-based producer States likely to be most seriously affected by the production of minerals derived from the Area" (background paper by the Secretariat)

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LOS/PCN/SCN.1/WP.2 (18 July 1984)
"Basic data and information of relevance to the work of Special Commission 1" (background paper by the Secretariat)

LOS/PCN/SCN.1/WP.2/Add.1 (2 August 1984)

LOS/PCN/SCN.1/WP.2/Add.2 (23 August 1984)

LOS/PCN/SCN.1/WP.2/Add.3 (31 July 1985)
"Basic data and information of relevance to the work of Special Commission 1: Responses from States/entities to the note verbale transmitted by the Secretary-General

LOS/PCN/SCN.1/WP.2/Add.4 (6 August 1985)
"Basic data and information of relevance to the work of Special Commission 1: Recycling of copper, nickel, cobalt and manganese"

LOS/PCN/SCN.1/WP.3 (8 February 1985)
"Concrete formulations of criteria for identifying developing land-based producer States likely to be most seriously affected by sea-bed production" (background paper by the Secretariat)

LOS/PCN/SCN.1/WP.4 (8 February 1985)
"Preliminary study on possible approaches to the measurements of potential effects of sea-bed production" (background paper by the Secretariat)

LOS/PCN/SCN.1/WP.5 (29 August 1985)
"Information on existing international or multilateral economic measures which could be of relevance to the work of Special Commission 1" (background paper by the Secretariat)

LOS/PCN/SCN.1/WP.5/Add.1 (3 April 1986)
"Information on existing international or multilateral economic measures which could be of relevance to the work of Special Commission 1: Report on the work of the United Nations Conference on Nickel and the developments regarding the formation of the International Nickel Study Group"

LOS/PCN/SCN.1/WP.5/Add.2 (2 March 1987)

LOS/PCN/SCN.1/WP.6 (27 February 1986)
"Factors that may be of relevance in examining the dependence of particular developing land-based producer States on the copper, nickel, cobalt and manganese sectors" (preliminary paper by the Secretariat)

LOS/PCN/SCN.1/WP.7 (18 March 1986)
"Identification of possible effects of a decline in export or production of copper, nickel, cobalt and manganese on developing land-based producer States" (preliminary paper by the Secretariat)

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LOS/PCN/SCN.1/WP.8 (25 March 1986)
"Basic principles for the implementation of measures to reduce the adverse effects on developing land-based producer States likely to be seriously affected as a result of activities in the Area" (proposals by the group of Eastern European socialist countries)

LOS/PCN/SCN.1/WP.9 (4 August 1986)
"Provisions of the Convention dealing with a system of compensation" (working paper by the Secretariat)

LOS/PCN/SCN.1/WP.10 (2 March 1987)
"Law of the Sea: System of compensation and/or a compensation fund" (background paper by the Secretariat)

C. Conference room papers

LOS/PCN/SCN.1/1984/CRP.1 (20 March 1984)
"Provisional agenda for Special Commission 1"

LOS/PCN/SCN.1/1984/CRP.2 (20 March 1984)
"Programme of work for Special Commission 1"

LOS/PCN/SCN.1/1984/CRP.3 (27 March 1984)
"Special Commission 1: List of issues to be dealt with under the programme of work"

LOS/PCN/SCN.1/1984/CRP.4 (3 April 1984)
"Some of the items on which the Secretariat is requested to provide data and information for the purposes of study by Special Commission 1"

LOS/PCN/SCN.1/1984/CRP.4/Corr.1 (11 April 1984)

LOS/PCN/SCN.1/1984/CRP.4/Add.1 (4 April 1984)

LOS/PCN/SCN.1/1984/CRP.4/Add.1/Corr.1 (11 April 1984)

LOS/PCN/SCN.1/1985/CRP.5 (13 March 1985)
"Opening statement of the Acting Chairman of Special Commission 1"

LOS/PCN/SCN.1/1985/CRP.6 (28 March 1985)
"Six-point proposal by the delegation of Pakistan for overcoming or minimizing the difficulties which may be encountered by developing land-based producer States on commencement of sea-bed mining of polymetallic nodules"

LOS/PCN/SCN.1/1985/CRP.7 (2 April 1985)
"Proposal by the delegation of Zimbabwe on remedial measures to alleviate problems that affect developing land-based producers for consideration by Special Commission 1"

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LOS/PCN/SCN.1/1985/CRP.8 (16 August 1985)
"Statement of the Chairman of Special Commission 1, provisionally concluding the discussion on the issue of the concrete formulation of the criteria for the identification of developing land-based producer States likely to be most seriously affected by sea-bed production"

LOS/PCN/SCN.1/1985/CRP.8/Corr.1 (22 August 1985)

LOS/PCN/SCN.1/1985/CRP.9 (26 August 1985)
"Statement of the Chairman of Special Commission 1, provisionally concluding the discussion on the issue of the preparation of an outline to study in-depth possible effects of sea-bed production in the Area on developing land-based producer States and to investigate the associated problems"

LOS/PCN/SCN.1/1986/CRP.10 (21 March 1986)
"Chairman's preliminary summary of points relevant to the work of Special Commission 1, contained in document LOS/PCN/SCN.1/WP.5"

LOS/PCN/SCN.1/1986/CRP.11 (20 August 1986)
"Statement on the work of Special Commission 1 submitted by the European Economic Community and its Member States"

LOS/PCN/SCN.1/1986/CRP.12 (27 August 1986)
"Proposal by the Group of 77 on Special Commission 1 matters. Proposal for the establishment of the compensation fund"

LOS/PCN/SCN.1/WP.12
1 March 1988

ORIGINAL: ENGLISH

PREPARATORY COMMISSION FOR THE
INTERNATIONAL SEA-BED AUTHORITY AND
FOR THE INTERNATIONAL TRIBUNAL FOR THE
LAW OF THE SEA
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Sixth session
Kingston, Jamaica
14 March-8 April 1988

MODALITIES OF THE ESTABLISHMENT OF A COMPENSATION FUND AND/OR A SYSTEM OF COMPENSATION: FINANCIAL CONSIDERATIONS

Preliminary paper by the Secretariat

1. In the context of the deliberations in Special Commission 1 during the fifth session of the Preparatory Commission with regard to a system of compensation and/or a compensation fund to assist developing land-based producer States which would suffer serious adverse effects as a result of future production from the international sea-bed area, "some delegations suggested and the Special Commission approved that the Secretariat prepare a study dealing with the modalities of the establishment of a compensation fund or other systems of compensation with particular emphasis on possible sources of financing, keeping in view the experience of existing ones" (LOS/PCN/L.44, para. 8). The present paper has been prepared by the Secretariat in response to that request. It should be added, in this connection, that on the subject of system of compensation and/or compensation fund the Special Commission has at its disposal two other Secretariat papers: "Provisions of the Convention dealing with a system of compensation" (LOS/PCN/SCN.1/WP.9), and "Law of the Sea: System of compensation and/or compensation fund - Legislative history of articles 151 (10), 160 (2) (l), 162 (2) (n), 164 (2) (d), 171 (f) and 173 (2) (c) and resolution I, paragraphs 5 (i) and 9 of the United Nations Convention on the Law of the Sea" (LOS/PCN/SCN.1/WP.10).

2. The expression "modalities of the establishment of a system of compensation and/or a compensation fund" can encompass a number of elements: (a) commodity coverage; (b) country coverage; (c) what is to be compensated (basis of compensation); (d) who is to be compensated (eligibility conditions); (e) how the extent of compensation is to be determined and calculated; (f) form of

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compensation; (g) procedures for applying for compensation; (h) procedures for taking decisions about the disbursement of compensation; (i) procedures for disbursement of compensation; (j) conditions for the use of compensation disbursements; (k) repayment, if applicable; (l) treatment of special cases; (m) institutional arrangements for the system or fund; (n) management and operation of the system or fund, etc. All these elements are interrelated, and each of them is crucially related to the nature and sources of financing of the system or fund. Since financing is the crux of the matter and in fact, the *sine qua non* of the viability of the system or fund, the present paper concentrates on the financing of a system of compensation and/or a compensation fund for alleviating the problems of developing land-based producer States resulting from future sea-bed production.

3. The present paper analyses the relevant provisions of the Convention with a view to obtaining an idea about the possible sources of financing of a system of compensation and/or a compensation fund. It also reviews the discussions in Special Commission 1 of relevance to the modalities of the establishment of a system of compensation and/or a compensation fund, and especially to the possible sources of financing of such a system or fund. In addition, the paper also draws upon the documents and materials obtained from the international and multilateral organizations under the auspices of which compensatory systems/schemes/facilities are being implemented or developed.

I. PROVISIONS OF THE CONVENTION

4. In the Convention, provisions referring to "compensation" appear under part XI in articles 151 (10), 160 (2) (l), 162 (2) (n), 164 (2) (d), 171 (f) and 173 (2) (c) and resolution I, paragraphs 5 (i) and 9 (see LOS/PCN/SCN.1/WP.9). Article 151 (10) of the Convention refers to the establishment of a system of compensation or other measures of economic adjustment assistance to assist developing countries which suffer serious adverse effects on their export earnings or economies resulting from a reducation in the price of an affected mineral or in the volume of exports of that mineral, to the extent that such reduction is caused by activities in the Area. However, it appears that these provisions are not specific as to the nature and sources of financing of a system of compensation and/or a compensation fund.

5. Given the fact that a system of compensation and/or a compensation fund, as and when established, would be under the auspices of the International Sea-Bed Authority, it is worthwhile to consider first the sources of financing of the Authority itself. Article 171 of the Convention specifies the possible sources of financing of the Authority itself. According to that article the funds of the Authority shall include:

(a) Assessed contributions made by members of the Authority, such assessed contributions to be made "to the administrative budget of the Authority in accordance with an agreed scale of assessment based upon the scale used for the regular budget of the United Nations until the Authority shall have sufficient income from other sources to meet its administrative expenses" (article 160 (2) (e));

(b) Funds received by the Authority pursuant to the provisions contained in annex III, article 13, of the Convention, which specify various forms of payment to the Authority that would be made by contractors and the Enterprise for exploration and/or exploitation of the resources of the international sea-bed area;

(c) Funds transrerred from the Enterprise, these being the remainder of the net income of the Enterprise after a portion of net income is retained as reserves of the Enterprise (refer to annex IV, article 10 (2));

(d) Funds borrowed pursuant to the borrowing power vested in the Authority (refer to article 174);

(e) Voluntary contributions made by members of the Authority or other entities; and

(f) Payments to a compensation fund "whose sources are to be recommended by the Economic Planning Commission" (article 171 (f)).

6. On the expense side, article 173 of the Convention lists the items of expenditure of the Authority. These items include:

(a) Administrative expenses of the Authority;

(b) Equitable sharing of financial and other economic benefits derived from activities in the Area, such sharing being carried out through an appropriate mechanism and in accordance with the rules, regulations and procedures approved by the Assembly of the Authority, taking into particular consideration the interests and needs of developing States and peoples who have not attained full independence or other self-governing status (refer to article 160 (2) (f) (i);

(c) Provision of funds to the Enterprise as it may require to carry out its functions (refer to article 170 (4); and

(d) Compensation to developing States under the system of compensation mentioned above.

7. Article 173 stipulates that the assessed contributions referred to in source (a) in paragraph 5 above shall be paid into a special account to meet the administrative expenses of the Authority until the Authority has sufficient funds from other sources to meet those expenses. It further stipulates that the administrative expenses of the Authority shall be a first call upon the funds of the Authority. Finally, according to this article, except for the assessed contributions referred to in source (a) of paragraph 5 above, the funds which remain after payment of administrative expenses may be expended on items (b), (c) and (d) in paragraph 6 above.

8. The diagram reproduced in the annex to the present paper presents a visual picture of the flow of funds of the Authority as described above. Focusing on the sources of financing of a system of compensation and/or a compensation fund, several issues arise:

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(i) Would there be a separate account of the compensation fund, or would the compensation fund be a part of the general account of the Authority?

(ii) Separate account or not, without prejudice to the outcomes of the future deliberations of the Economic Planning Commission, could the sources of payments to the compensation fund be additional to sources (b), (c), (d) and (e) in paragraph 5 above, or these sources alone, or a combination of these sources and additional sources?

(iii) While it is implicit that disbursements from the compensation fund would be exclusively to compensate developing land-based producer States, could such States be compensated with the help of funds from the other sources mentioned in paragraph 5 above, except, of course, the assessed contributions? In other words, is there a one-to-one relationship between the financing of the system of compensation and that of the compensation fund?

9. Without prejudice to the outcomes of the future deliberations of the Economic Planning Commission, in case the sources of financing of the system of compensation and/or the compensatin fund happen to include sources (b), (c), (d) and (e) of the Authority's financing mentioned in paragraph 5 above, several important implications are to be borne in mind. First, the nature of the funds from various sources could be significant. While funds from sources (b) and (c), i.e. funds received by way of payments from the contractors and the Enterprise in connection with the activities in the Area, and funds transferred from the Enterprise's net income would be of the nature of outright income of the Authority, funds from source (d), i.e. borrowing, would have to be repaid, and funds from source (e), i.e. voluntary contributions, could be in the nature of outright income of the Authority or interest subsidies. Thus disbursements to the developing land-based producer States from the system of compensation and/or compensation fund in the form of loans, grants and concessionary elements would be dependent on the nature of funds obtained from various sources. In effect, funds borrowed by the Authority could only be disbursed as loans to developing land-based producer States under the identical terms and conditions. If the Authority's outright income or concessions in the voluntary contributions make it possible, the Authority would be in a position to make disbursements of grants or concessionary loans to developing land-based producer States.

10. Secondly, considerations of complementarity of transfers to developing land-based producer States could be important. In accordance with articles 140 and 160 (2) (f) (i) and (g) of the Convention, developing land-based producer States, along with other member States and entities, would benefit, as individual States, from the equitable sharing of financial and economic benefits derived from activities in the Area. In the equitable sharing, the interests and needs of developing States would be taken into particular consideration. Thus, developing land-based producer States may receive transfers from the Authority under three titles: as members of mankind; as developing countries whose interests and needs would have to be taken into particular consideration in benefit-sharing; and as land-based producer States which would be adversely affected by sea-bed production.

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11. Thirdly, given the amount of funds at the disposal of the Authority, considerations of the allocation of funds among the three items of disbursements (b), (c) and (d) mentioned in paragraph 6 above, i.e. disbursements in connection with benefit-sharing, disbursements to the Enterprise, and disbursements to compensate developing States, could be important.

12. In this context, it would be extremely useful to obtain an idea about the amount of funds that would be available from sources (b) and (c) mentioned in paragraph 5 above, i.e. funds received from contractors and the Enterprise in connection with activities in the Area, and funds transferred from the Enterprise's net income. It should be noted that according to annex IV, article 10 (3), during an initial period required for the Enterprise to become self-supporting, which shall not exceed 10 years from the commencement of commercial production by it, the Assembly shall exempt the Enterprise from the payments in connection with activities in the Area, and shall leave all of the net income of the Enterprise in its reserves.

13. At present it is extremely difficult to estimate the future income of the Authority resulting from the financial terms of contracts and the transfers from the Enterprise. The future demand outlook for the metals in question and the economics of future sea-bed mining operations are at the heart of the issue. The so-called production limitation formula contained in article 151 of the Convention is linked with the future consumption of nickel, and sets a limit to the production of nickel from polymetallic nodules derived from the Area. Again, the built-in progressivity in the payment structure from the contractors and the Enterprise to the Authority means that in case of low-earning sea-bed operations the income of the Authority will not only be lower in absolute terms, it will also be lower more than proportionally in comparison with high-earning operations. At this time, the Secretariat did not attempt to arrive at any estimates in the absence of any agreed assumptions about certain crucial parameters, e.g. (a) the timing of the earliest commercial production from the Area; (b) world nickel consumption in the years before the earliest commercial production from the Area; (c) whether sea-bed production would be equal to or below the production ceiling calculated according to article 151; (d) the number and quantities of metals to be produced from the nodules derived from the Area; (e) future metal prices; (f) development costs and operating costs of sea-bed mining operations, etc.

II. EXISTING AND PROPOSED SYSTEMS/SCHEMES/FACILITIES 1/

14. In the field of commodities (export earnings from commodities or contribution of commodities to the economy), there are at present two international or multilateral systems/schemes/facilities operating, which have compensatory aspects: the International Monetary Fund's Compensatory Financing Facility (IMF's CFF) and the Stability of Export Earnings Scheme of the European Economic Community - African, Caribbean and Pacific States (EEC-ACP's STABEX). There is one system/scheme/facility under consideration for future establishment, the Complementary Facility for Compensatory Financing, of the United Nations Conference on Trade and Development (UNCTAD's Complementary Facility). Another system/scheme/facility which can be mentioned in this connection is EEC-ACP's

System for Minerals (SYSMIN); however, it is not clear whether SYSMIN has any compensatory aspect. As article 176 of the Third ACP-EEC Convention states:

> "With a view to contributing to the creation of a more solid basis for the development of the ACP States whose economies are dependent on the mining sectors and in particular towards helping them cope with a decline in their capacity to export mining products to the Community and the corresponding decline in their export earnings, a system shall be established to assist these States in their efforts to re-establish the viability of the mining sectors or to remedy the harmful effects on their development of serious temporary or unforeseeable disruptions affecting those mining sectors and beyond the control of the ACP States concerned". (Emphasis added) 2/

15. The attention of the Special Commission is drawn to the fact that brief descriptions of all the systems/schemes/facilities mentioned above except for STABEX are contained in the Special Commission 1 document entitled "Information on existing international or multilateral economic measures which could be of relevance to the work of Special Commission 1" (LOS/PCN/SCN.1/WP.5 and Add.1 and 2).

16. STABEX is a commodity-specific compensatory financing system of a regional nature, in principle limited to trade flows of basic agricultural commodities from ACP countries to the European Economic Community (EEC). At present, in accordance with the Third ACP-EEC Lomé Convention, 48 agricultural products are covered under STABEX, and 66 ACP States and overseas countries and territories can benefit from the system. For the product or products concerned, the total exports (to all destinations) from the country which has requested a STABEX transfer must, during the year of application, have brought in earnings representing not less than a stipulated percentage (6 per cent, with the exception of 4.5 per cent for sisal, and 1.5 per cent for the least developed land-locked and island ACP countries). This is known as the dependency threshold. If, during a calendar year, an ACP State's actual earnings from its exports of any of the products or groups of products considered individually to the Community are at least a stipulated percentage (6 per cent for ACP countries other than the least developed land-locked and island ACP countries and 1.5 per cent for the latter) below the reference level set for the product or group of products in that ACP State, the ACP State may request a transfer of funds under STABEX. This is known as the trigger threshold. The reference level is calculated for each product or group of products and for each country. It corresponds, in most cases, to the average of export earnings in the four years preceding the year of application. The difference between the reference level and actual earnings, plus 1 per cent for statistical errors and omissions, constitutes the basis of the transfer under STABEX. STABEX is managed by the Commission of the European Communities; transfer decisions are adopted by the Commission. With regard to the use of transfers, before the transfer agreement is signed the recipient country has to communicate substantial information (diagnosis of the problem in the sector or sectors concerned, statistics and the allocation plan that has been drawn up) related to the programmes and operations to which funds are to be allocated. All ACP recipient countries except the least developed have to repay the transfers. Under the Third ACP-EEC Lomé Convention, the Community has allocated 925 million European currency units (ECU) ($US 825 million) for the five-year period of the Convention. These funds form

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part of the European Development Fund (EDF), which consists of the financial resources of the EEC member States made available for the ACP countries under the present Lomé Convention. 3/

17. With regard to the financing of the existing or proposed system/schemes/facilities of the compensatory nature, two important observations can be made: (a) except in the case of UNCTAD's proposed Complementary Facility, the financing of the compensatory schemes forms part of the overall financing of the organization; and (b) in each case, repayable loans to recipient countries constitute a major part of the transfers so that the revolving, self-financing aspect as well as borrowing as a source of financing take on substantial roles. In the case of IMF's CFF, financing of the facility comes from the overall pool of resources available to IMF which in turn is formed essentially by the quota contributions of the members. All disbursements to recipients are in the form of repayable loans, albeit with concessionary elements. In the cases of ACP-EEC's STABEX and SYSMIN, financing of the schemes comes from the overall resources of the European Development Fund (EDF) which are in turn formed by the contributions of the EEC members. Also, repayable loans account for a high percentage of disbursements to recipient countries, although these loans include substantial concessionary elements. In the case of UNCTAD's proposed Complementary Facility, a mixture of regular loans, loans with concessionary elements, mixed loans and grants and outright grants is being contemplated.

18. The significance of the financing of the compensatory system/scheme/facility coming from an overall pool of resources of the organization is that the issue of financing of the system/scheme/facility itself is subsumed under the issue of financing of the organization. Financing from an overall pool of resources thus means that the issue of financing of the compensatory system/scheme/facility becomes, in effect, an issue of internal allocation of funds rather than fresh fund-raising.

19. In the case of UNCTAD's Complementary Facility, irrespective of the fact that the alternative institutional arrangements of the Facility contitute either a separate window within the World Bank, the third account within UNCTAD's Common Fund or an independent facility, fresh fund-raising is contemplated. It would be interesting to study the sources that are being envisaged in the fresh fund-raising scenario.

20. At present, deliberations on the Complementary Facility are continuing in the forums of the Intergovernmental Group of Experts on the Compensatory Financing of Export Earnings Shortfalls, the Committee on Commodities, the Trade and Development Board and the Conference itself. There are no agreed conclusions about the financing of the Complementary Facility; however, the studies of the UNCTAD secretariat include suggestions about financing. 4/ The essential idea is that the Facility would be authorized and able to borrow from all sources of credit for lending to the Governments of developing countries for purposes approved by the Facility. In order to provide security for borrowings, the Facility would have subscribed capital made up, in part, of paid-in capital and of callable capital, as the remainder. The subscription of paid-in and callable capital would be made by Member States according to some agreed formulae. These subscriptions could be

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phased in depending on the borrowing requirements and the credit rating of the Facility. In addition to subscribed capital, the Facility would require government contributions in the form of grants and interest subsidies to meet the concessional elements in the disbursements from the Facility to the recipient developing countries.

21. With regard to borrowing, the choice of borrowing strategies and sources of credit should be such as to give the Facility the opportunity to find the best means of reconciling its two basic financial objectives - that of maximizing the flexibility of financing and that of minimizing the average interest cost of its borrowing. Drawing upon the studies made for the Common Fund, the sources of credit that could be identified as being open to a facility of the kind would be both official and private sources. The two official sources of credit would be the international financial institutions and the central banks of member countries, with the caveats that access to credit from the international financial institutions would depend on the extent to which the Facility's objectives were considered to fall within the purposes for which such institutions were empowered to lend under the terms of their charters, and borrowing from central banks may be restricted because of regulations requiring them to hold only assets of certain types and issues by certain organizations. With regard to private (commercial) sources of credit, access of the Facility is envisaged to sources of short-term borrowing such as the inter-bank euro-currency market; the commercial bank stand-by arrangements, e.g., domestic bank credit lines and euro-currency market, certificates of deposits, bankers' acceptances, commercial paper, etc.; medium-term sources of borrowing such as public issues of securities in the one- to five-year maturity range; and long-term sources of borrowing such as issues of floating-rate notes and fixed-rate bonds.

III. DELIBERATIONS IN THE SPECIAL COMMISSION

22. In the deliberations of the Special Commission various sources of financing of a system of compensation and/or a compensation fund have been mentioned, either in the course of discussion in the Special Commission, in the proposals of various delegations or in the Secretariat papers. 5/ Essentially, these sources fall under four broad categories: (a) assessed or specified contributions from States; (b) part of the contractors' income; (c) part of the Enterprise's income; and (d) voluntary contributions. It is not quite clear whether these sources are envisaged to make funds available to the Authority's overall pool of resources or for the separate financing of the compensation system/fund. It is likewise not clear whether funds from sources (b), (c) and (d) above would be additional to the funds from similar sources from which the Authority itself would obtain financing (see para. 5 above), or whether funds from these sources would merely be a part of those received by the Authority.

23. With regard to assessed or specified contributions from States, various possibilities have been mentioned. These can be summarized as contributions from (a) all States Parties of the Authority; (b) all developed States Parties; (c) all sea-bed mining States Parties; (d) all developed sea-bed mining States Parties; (e) all developed importing States Parties; (f) all developed importing States

Parties which are sea-bed mining countries; and (g) all sea-bed mining States Parties which traditionally used to import the mineral in question from developing land-based producer States. Various combinations of the above were also mentioned. However, it is not quite clear what form these contributions would take, e.g. grants, interest-free or low-interest loans, regular loans or subscribed capital. There was also no indication as to how the States themselves would raise the funds; however, in a Secretariat paper (LOS/PCN/SCN.1/WP.1) two possibilities were mentioned: a consumption levy on consumers of minerals in question at a price lower than the base price, and a trade levy on the sea-bed producers which enjoy extra-marginal profits or guaranteed market access.

24. There was no specific mention of borrowing as a source of financing. However, since the form of the contributions from States was not mentioned, it is conceivable that an alternative would be to obtain these contributions in the form of subscribed capital on the basis of which borrowing from official and private sources can be made.

IV. CONCLUDING REMARKS

25. The modalities of the establishment of a system of compensation and/or a compensation fund are inescapably dependent on the financing of such a system/fund. Without prejudice to the outcome of the future deliberations of the Economic Planning Commission, the present paper has attempted to summarize various possibilities regarding sources of financing in order to facilitate the discussion in the Special Commission.

Notes

1/ This section has been prepared based on the materials obtained from the organizations concerned. See, in particular, Louis M. Goreux, *Compensatory Financing Facility*, IMF, Washington, D.C., 1980 (IMF Pamphlet Series, No. 34); International Monetary Fund, *The International Monetary Fund 1945-1965: Twenty Years of International Monetary Co-operation*, Vol. III, IMF, Washington, D.C., 1969; ACP-EEC Council of Ministers, *The Third ACP-EEC Convention, signed at Lomé on 8 December 1984, and Related Documents*, Brussels, 1985; United Nations Conference on Trade and Development, "Compensatory financing of export earnings shortfalls - Report of the Expert Group" (document TD/B/1029/Rev.1, New York, 1985).

2/ ACP-EEC Council of Ministers, *The Third ACP-EEC Convention*, *op. cit*. In this connection, see also United Nations Conference on Trade and Development, "Complementary facility for commodity-related shortfalls in export earnings (Conference resolution 125(v)): Review of STABEX and SYSMIN - Report by the UNCTAD secretariat" (document TD/B/C.1/237 of 22 November 1982), in paragraph 72 of which it is stated that "it (SYSMIN) is not ... specifically designed to compensate for export earnings shortfalls ...".

Notes (continued)

3/ This paragraph has been excerpted from ACP-EEC Council of Ministers, The Third ACP-EEC Convention, op. cit., UNCTAD, document TD/B/1029/Rev.1, op. cit., and "Continued analysis of the need for a new facility on compensatory financing of export earnings shortfalls, as well as further work on the rules and modalities of any complementary facility: Commodities earnings shortfalls and an additional compensatory financing facility - Report by the UNCTAD secretariat" (document TD/B/AC.43/2 of 23 April 1986).

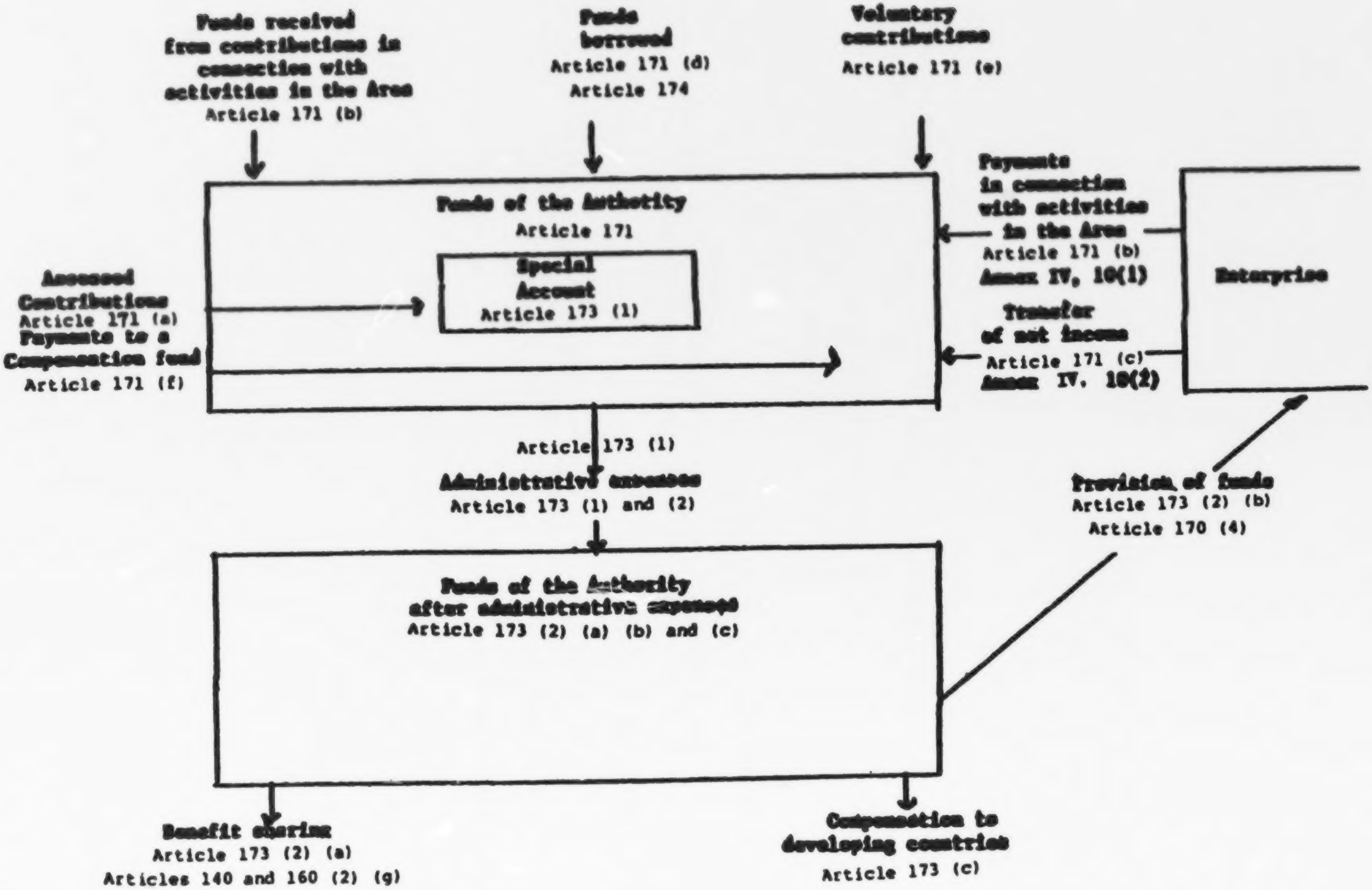
4/ A number of UNCTAD documents have dealt with the topic. See, in particular, United Nations Conference on Trade and Development, "Complementary facility for commodity-related shortfalls in export earnings (resolution 125(V)): Proposal by the UNCTAD secretariat" (document TD/B/C.1/221 of 2 December 1981), and "Complementary facility in commodity-related shortfalls in export earnings (resolution 125(v)): Feasibility study by the UNCTAD secretariat" (document TD/B/C.1/222 of 19 October 1981).

5/ See, for example, LOS/PCN/L.44, LOS/PCN/SCN.1/WP.1 and 8, and LOS/PCN/SCN.1/1986/CRP.12.

/...

Annex

FLOW OF FUNDS
OF THE INTERNATIONAL SEA-BED AUTHORITY


Funds received from contributions in connection with activities in the Area
Article 171 (b)
Funds borrowed
Article 171 (d)
Article 174
Voluntary contributions
Article 171 (e)
Payments in connection with activities in the Area
Article 171 (b)
Annex IV, 10(1)
Enterprise
Transfer of net income
Article 171 (c)
Annex IV, 10(2)
Funds of the Authority
Article 171
Special Account
Article 173 (1)
Assessed Contributions
Article 171 (a)
Payments to a Compensation fund
Article 171 (f)
Article 173 (1)
Administrative expenses
Article 173 (1) and (2)
Provision of funds
Article 173 (2) (b)
Article 170 (4)
Funds of the Authority after administrative expenses
Article 173 (2) (a) (b) and (c)
Benefit sharing
Article 173 (2) (a)
Articles 140 and 160 (2) (g)
Compensation to developing countries
Article 173 (c)

/...

LOS/PCN/SCN.1/WP.12/Corr.1
13 September 1988

ORIGINAL: ENGLISH

PREPARATORY COMMISSION FOR THE
INTERNATIONAL SEA-BED AUTHORITY
AND FOR THE INTERNATIONAL TRIBUNAL
FOR THE LAW OF THE SEA
Special Commission 1
New York, 15 August-2 September 1988

MODALITIES OF THE ESTABLISHMENT OF A COMPENSATION FUND AND/OR A SYSTEM OF COMPENSATION: FINANCIAL CONSIDERATIONS

Preliminary paper by the Secretariat

Corrigendum

1. Paragraph 14, lines 11 and 12

For however, it is not clear whether SYSMIN has any compensatory aspect *read* however, SYSMIN has no direct compensatory aspect

2. Paragraph 16, lines 5 and 6

For 66 ACP States and overseas countries and territories can benefit from the system. *read* 66 ACP States can benefit from the system. An analagous system applies to the overseas countries and territories.

3. Paragraph 16, line 21

For 1 per cent *read* 2 per cent

4. Paragraph 16, line 31

For ($US 825 million) *read* (about $US 1,065 million at the current rate of exchange)

/...

LOS/PCN/SCN.1/WP.13
28 February 1990

ORIGINAL: ENGLISH

PREPARATORY COMMISSION FOR THE INTERNATIONAL
SEA-BED AUTHORITY AND FOR THE INTERNATIONAL
TRIBUNAL FOR THE LAW OF THE SEA
Special Commission 1
Eighth session
Kingston, Jamaica
5-30 March 1990

BILATERAL TRADE IN MINERALS

Background note by the Secretariat

1. The interest of Special Commission 1 in studying bilateral trade involving copper, nickel, cobalt and manganese centres around the following two issues: (i) it is conceivable that the exports of these minerals from developing land-based producer States are not determined by usual market forces alone, but also by the terms and conditions of bilateral trade agreements; (ii) it may be possible to obtain a better idea about the potential effects of future sea-bed production on the price of a mineral or the volume of exports of that mineral from a developing land-based producer State by studying the bilateral trade relationships between the developing State and its trading partners, in respect of that mineral, both before and after sea-bed production occurs.

2. Bilateral trade agreements most often involve a commitment among the trading partners that the exports of goods and/or services of partner A to partner B will be paid for, fully or partially, by the imports of goods and/or services from partner B by partner A, rather than by cash. This type of exchange is called countertrade; "countertrade is an umbrella term for several sorts of trade including barter." 1/ The Special Commission's interest in studying bilateral trade thus encompasses barter trade and its generic form, countertrade of developing land-based producer States involving any of the minerals concerned.

I. DATA PROBLEMS WITH REGARD TO BILATERAL TRADE AGREEMENTS AND COUNTERTRADE

3. Any study of bilateral trade agreements or countertrade, including barter trade, is severely hampered by the lack of availability of reliable and systematic data. A compilation of bilateral trade agreements between the relevant exporting and importing countries does not exist, and any information about bilateral trade agreements can only be obtained on a case-by-case basis. On a case-by-case basis also, it is extremely difficult to obtain information about the details of a specific trade agreement and its terms and conditions.

4. The data problems are inherent in the nature and scope of bilateral trade agreements and countertrade. This is exemplified by the following three extracts, two from documents prepared by or for the United Nations Conference on Trade and Development (UNCTAD) and the other from a publication prepared by the Department of Commerce of the United States of America (the wide range of estimates mentioned in the extracts is a natural by-product of the difficulties in obtaining data).

> "There are no reliable data on countertrade volumes, on the goods it involves or the ultimate destinations of this exchange. Estimates differ widely. For example, OECD estimates that at best only 2 per cent of OECD trade is in this form. GATT estimates that countertrade may constitute some 9 per cent of world trade, excluding bilateral deals with Eastern Europe. OECD also estimates that 10 per cent of the trade among developing countries, i.e. trade worth $US 12.5 billion, and 30 per cent of these countries' trade with Eastern Europe, i.e. trade worth $US 14.2 billion, takes the form of countertrade. Other, less reliable estimates, put the volume of countertrade at some 25-40 per cent of total world trade. Whatever the actual figure is, the volume of countertrade seems to have become a significant portion of world trade.
>
> "It should not be surprising that factual information is hard to come by. There is no systematic reporting of countertrade, and parties are usually reluctant to divulge information. The reported statistics include countertrade in the aggregate and there is no analytic method to separate such trade from the rest. Moreover, often enough the initial deals are not fully fulfilled, and thus even if all initial agreements were reported, the information would be a mere expression of intent, a mere commitment rather than actual transaction data." 2/
>
> "Estimates of the volume of countertrade as a share of world trade vary tremendously - ranging from as low as 1 per cent by the International Monetary Fund to as high as 40 per cent by some countertrade proponents and press reports. Estimates of the General Agreement on Tariffs and Trade (GATT) merchandise trade and the OECD's Working Party of the Trade Commission on North-South Trade notes that the volume of countertrade both in absolute terms and as a share of world trade is significant and, more important, is growing rapidly. The socialist countries of Eastern Europe still account for the largest share of global countertrade, but that ratio is declining rapidly as that of other geographical areas - particularly South-East Asia, the Middle East and Latin America - has grown at a fast pace in the last three years.

/...

Africa's share of global countertrade, as well as its share of overall trade, is still very low - by some accounts about 10 per cent - but concerted efforts are being made to make it grow significantly in the context of subregional and other South-South transactions.

"The fact remains that no exact data are available on total and regional countertrade volumes. This is due to a number of factors, key among them being the degree of secrecy surrounding such deals, particularly in the private sector, as well as the fact that they often entail a degree of price distortion which complicates statistical compilations. An equally difficult problem in tabulating countertrade transactions stems from definitional problems - that is, how strictly or loosely countertrade is defined. The volume of trade attributed to countertrade will clearly vary depending on whether its definition is limited to straight barter transactions or whether it encompasses more complex forms of compensation, counter-purchase and buy-backs, and whether or not it includes military offset arrangements, bilateral clearing agreement transactions, switch trading, commodity swaps and other forms of bilateral or multilateral trade co-operation." 3/

"Extent (of countertrade). According to press reports, international countertrade comprises 20 per cent, or more, of world trade. There is little quantitative data to support these claims, as the information that is available is of a scattered nature. Moreover, few of the transactions reported at one time or another as being in negotiation are actually concluded successfully. The quoted figures probably reflect different categories of countertrade-like arrangements, the major portion of which are intergovernmental agreements.

"The International Monetary Fund (IMF), the secretariat of the General Agreement on Tariffs and Trade (GATT), and the United States Department of State have estimated considerably lower figures (1 per cent to, at most, 8 per cent, of world trade). However, these estimates exclude government-sponsored bilateral trade and payments arrangements.

"...

"An upper value for annual countertrade flows has been evaluated by Gary Banks, an economist with the secretariat of GATT, on the basis of reported or estimated percentages of regional trade volumes. He estimates the size of counter-deliveries resulting from East-West trade transactions and from those between Western firms and developing countries to constitute a maximum of 2 per cent of world trade. Classical barter transactions, whereby the exchange of goods involves no cash, are estimated by Banks at another 3 per cent of world trade.

"Intergovernmental bilateral trade and payments arrangements, under which practically all trade is conducted among communist countries and which account for about one half of the trade among developing countries, are evaluated to constitute, at most, 10 per cent of world trade by the GATT economist.

/...

> "Not included in Banks' estimates are: the contributions from the rising incidence of intergovernmental commercial agreements linking exchanges of specific commodities and goods; offset arrangements resulting from military sales and other capital-intensive government procurements; intra-company swaps and linked import/export transactions of commodities conducted by trading houses on their own account; production sharing arrangements for raw materials which commit deliveries of minerals over extended time periods to the Western countries which finance such projects and export performance requirements affecting foreign investment or sectoral imports in a number of developed and developing countries. The contribution from these types of linked arrangements, provided they can be all classified under the generic term of countertrade, may account annually perhaps for another 1 per cent of world trade.
>
> "Thus, even a high estimate, inclusive of all categories of trade arrangements which condition imports on exports, likely accounts for considerably less than 20 per cent of annual world trade. It is, however, evident that, at a time when world trade levels over the last few years have remained practically stagnant, countertrade transactions as a percentage of world trade have grown considerably, albeit from a very small base". 4/

Characteristics of countertrade

5. The problems of obtaining data with regard to bilateral trade agreements and countertrade, including barter trade, are evident from the above. Some of the data problems arise from the very characteristics of countertrade. These characteristics include the following: (a) goods may not be exchanged for goods alone: goods, services or a combination of goods and services can be exchanged for goods, services or a combination of goods and services; (b) goods/services may not be fully paid for by goods/services: there may be partial cash payments involved; (c) the exchange of goods/services may not be implemented in one transaction: it may be implemented through several transactions over a period of time; (d) trading partners may not be limited to two: countertrade may be carried out among a number of partners; (e) countertrade may not be limited to Government-to-Government trade, or may not require government involvement always: trading partners can be Governments, State trading agencies, trading houses or private-sector companies.

Various forms of countertrade, including barter

6. Countertrade can take many forms, some of which are quite complex, and these complexities add to the data availability problems. The problems of definition can lead to a lack of precision and comprehensiveness in the data. There are different ways of categorising the various forms of countertrade, and the terminology used also differs. 5/ Basically, countertrade involves linked exchanges of a set of goods/services for another set of goods/services. When the exchange balances by itself and there is at the same time no credit or cash involved, this form of countertrade is called barter. When the exchange does not balance and the imbalances are periodically settled in cash, countertrade takes the form of a bilateral clearing agreement. In some cases under bilateral clearing agreements, the deficit country does not pay the surplus country in cash; instead, surplus

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balances are switched to third countries. This is called switch trade. Switch trade may involve a number of countries, the basic idea being to reach a balance between surpluses and deficits among a number of countries which agree among themselves to do so in order to avoid payment in convertible currency. When the exchange does not balance at a given point but balances over a period of time, and thus, some credits are involved in the in-between period, countertrade takes the form of offsets. In offsets, parallel and separate cash flows for imports and exports occur, usually under separate contracts.

7. Offsets, which are also called compensations, can be of various types, depending on whether or not the exchanges are directly related to the export product. A mineral project or a turn-key project in a developing country developed with capital goods (machinery, equipment, etc.) and technology from an industrialized country pays back the latter with mineral commodities when the project goes into production. This is called buy-back. A developing country may produce certain amounts of components of a final product in exchange for the final product from an industrialized country, or it may import the supplies and materials from an industrialized country and pay the latter back with certain amounts of final product. This involves co-production and is thus called direct offset. Finally, a developing country may import certain amounts of a set of goods and pay for these imports by exporting certain amounts of another unrelated set of goods over a period of time. This is called counter-purchase. Counter-purchase can take the reverse form when the developing country exports a set of goods in advance in order to import an unrelated set of goods at a later time. This form of counter-purchase is called advance purchase, or junk-tim. 6/

8. It can be easily seen that tracking down which goods/services are being exchanged, in what quantities, for what implicit prices, among which countries, etc., can be quite a complicated process, and this makes the data collection and analysis exercise extremely difficult.

Other reasons for data problems

9. Working out the detailed terms and conditions of countertrade deals - quantity, implicit price of exchange, quality, timing, performance requirements, etc. - can be an involved process. In fact, it is estimated that only one out of 10 perspective countertrade deals actually materialize. 7/ Ensuring that the detailed terms and conditions are adhered to can also be a complex matter. Thus information is required about which countertrade deals materialized and to what extent the negotiated deals were implemented in reality.

10. The disposal of countertraded goods can be a chain process, since often the countertraders themselves are not the final users and need to find final buyers. Intermediaries, such as trading agencies, merchants, banks and other trading and financial institutions may be involved. Price discounts are often a feature of countertrade. These factors can contribute to the tracking down and valuation problems in respect of data collection.

/...

11. Countertrade practices may sometimes succeed in circumventing trade barriers in the form of tariffs, quotas, licences and other restrictions. World markets fo goods and services are often segmented for various reasons; countertrade can be a means of obtaining the best terms in different segments. Another point is that, terms of official policy, the market economy countries in general do not encourage, if not actually discourage, countertrade as compared to regular trade, although at present countertrade takes place in all groups of countries - North-South, including East-South and West-South, East-West, as well as intra-South, intra-East and intra-West, the most prevalent ones being East-West, East-South, West-South an intra-East. International organisations concerned with the field of internationa trade, such as the International Monetary Fund (IMF), the General Agreement on Tariffs and Trade (GATT) and the World Bank do not in general view countertrade favourably. These factors contribute to the lack of transparency in the countertrade agreements, and consequently to data problems.

II. COUNTERTRADE IN DEVELOPING LAND-BASED PRODUCER STATES

12. With respect to developing land-based States producers of copper, nickel, cobalt and manganese, countertrade is in practice in almost all such States, and most also have some sort of official policy in relation to countertrade. For example, among Asian producer States, countertrade practices and/or policies exist in India, Indonesia, Malaysia, Pakistan, China, the Philippines, the Republic of Korea and Thailand; among African producer States, in Algeria, Egypt, the Congo, Gabon, Ghana, Kenya, Morocco, Mozambique, the Sudan, Zaire, Zambia and Zimbabwe; and among Latin American producer States, in Argentina, Bolivia, Brazil, Chile, Cuba, the Dominican Republic, Ecuador, Guatemala, Mexico, Nicaragua and Peru. 8/

13. However, in view of the fact that the four minerals concerned have establish world markets, and can be sold for convertible currencies, most developing land-based producer States are not keen about, and often exclude, countertrade involving these minerals. Minerals and metals in general do not figure prominent in countertrade exports of developing countries for the same reasons. Under nor circumstances, those metals and minerals for which world-wide markets do not exi or standardized and uniform product specification is difficult, are usually considered for exports under countertrade deals. The general feature of the countertrade practice or policy of developing land-based producer States is the effort to seek new markets for established products or to create markets for new and non-traditional products; this also means that it is possible to avoid the diversion of exports for which convertible currencies can be earned. 9/

14. Nevertheless, with the purpose of pursuing the objectives of opening new markets, strengthening links with existing markets in countries with inconvertible currencies or "sweetening" deals involving other products, developing land-based producer States may sometimes include copper, nickel, cobalt and/or manganese in countertrade exports. Furthermore, in order to attract foreign investment in the development of a mineral project, countertrade in the form of buy-backs is not uncommon.

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15. During periods when the world market for any of the four minerals concerned is depressed or sluggish, developing land-based producer States are not averse to countertrade deals involving that mineral. In this context, another pertinent point is that with prices or volumes of exports falling with respect to these minerals, although there may not be any countertrade deals involving these minerals, falling foreign exchange earnings from these minerals may necessitate countertrade deals involving other products. Thus, for the purpose of the Authority, not only countertrade involving these minerals but other countertrade carried out by developing land-based producer States may need to be studied.

16. It should be added that although countertrade is often included in a bilateral trade agreement, the latter can involve cash purchases only. There may be an agreement between a smelter and a miner that the smelter will purchase ores or concentrates from the miner under certain terms and conditions. Such agreements are often entered into because of various factors: traditional buyer/seller relationships; financial and other costs involved in finding new buyers and sellers; marketing, transaction and transportation costs; security of supply for the smelter and security of market for the miner; political considerations; economic bloc relationships; fiscal considerations, etc. Information on this type of agreement is also required by the Authority.

III. SUGGESTIONS

17. In view of the data problems discussed above and the fact that any data collected at the present time may be outdated for the purpose of the Authority since "countertrade deals are typically entered into for periods of one to three years", 10/ but bearing in mind that the Authority will need relevant and timely data, the Special Commission may wish to consider whether it would be helpful to request the Authority to study the issue further in due time, in co-operation with competent international organisations. If such an approach is taken by the Special Commission, it may wish to consider the preparation of a recommendation to the Authority along the following lines:

> "The Authority should, in co-operation with the competent international organizations, especially United Nations Conference on Trade and Development, International Monetary Fund, the World Bank, and the Organisation for Economic Co-operation and Development, study the problems of collecting and analysing data and information on bilateral trade agreements and countertrade of developing land-based producer States, involving copper, nickel, cobalt and manganese, and other goods/services, and systematically maintain any available information, data and estimates. The Authority should, in due time, consult with the relevant States about effective ways and means of obtaining pertinent information and data on bilateral (or multilateral, if applicable) trade agreements and countertrade with a view to utilising such information and data for its purpose, with due regard to confidentiality, if necessary."

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Notes

1/ "East-West countertrade: a necessary evil", *The Economist*, 25 November 1989, p. 79.

2/ TD/B/C.7/82, paras. 8 and 9. The above-mentioned estimates of the Organisation of Economic Co-operation and Development (OECD) and the General Agreement on Tariffs and Trade (GATT) are from OECD, Secretariat, *Countertrade. Developing Countries' Practice*, (Paris, OECD, 1985).

3/ "Countertrade policies and practices by selected African and Latin American countries", UNCTAD/ST/ECDC/32, paras. 5 and 6.

4/ Pompiliu Verzariu, *International Countertrade: A Guide for Managers an Executives*, United States Department of Commerce, Washington, D.C., 1984, pp. 4 and 5. The Gary Banks study mentioned is Gary Banks, "The economics and politics of countertrade", *The World Economy Journal*, June 1983.

5/ See, for example, Leo G. B. West, *Countertrade*, (London, Euromoney Publications, 1985); Stephen F. Jones, *North/South Countertrade*, The Economist Intelligence Unit, 1984.

6/ Barter is the most commonly known form, but it accounts for only a smal portion of countertrade (about 5 per cent). Bilateral clearing agreements accoun for about 10 per cent, and the remaining 85 per cent is accounted for by offsets. Among offsets, counter-purchase is the most common type, accounting for about 65 per cent, while direct offset accounts for 25 per cent and buy-back accounts f 10 per cent. These figures are derived from Jones, *op. cit*. However, the reader should refer to the data problems discussed in the paper.

7/ See note 1, above.

8/ See, for example, P. N. Agarwala, "Countertrade policies and practices selected Asian countries and their State trading organizations", report prepared the request of the UNCTAD Secretariat, UNCTAD/UNDP Project RAS/81/068; UNCTAD/ECDC/176 and Add.1; UNCTAD, *Countertrade policies and practices by selecte African and Latin American countries* (see note 3, above); OECD, Secretariat, *Countertrade. Developing Countries' Practice* (see note 2, above). A good source for scattered information on countertrade practices/policies is the journal *Countertrade and Barter*, published bimonthly by Metal Bulletin Publishers.

9/ It was estimated by *The Economist* that minerals and metals accounted fo about 10 per cent of the total countertraded exports of developing countries; agricultural products accounted for about 35 per cent; oil and petroleum products about 10 per cent; manufactured goods about 25 per cent; and the remainder was accounted for by unspecified products; *The Economist*, 5 October 1985, p. 21. However, the reader should refer to the data problems discussed in the paper.

10/ Agarwala, *op. cit*., para. 9.

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LOS/PCN/SCN.1/WP.14
14 August 1991

ORIGINAL: ENGLISH

PREPARATORY COMMISSION FOR THE
INTERNATIONAL SEABED AUTHORITY
AND FOR THE INTERNATIONAL TRIBUNAL
FOR THE LAW OF THE SEA
Special Commission 1
New York, 12-30 August 1991

INTERNATIONAL COMMODITY AGREEMENTS OR ARRANGEMENTS

Background note by the Secretariat

INTRODUCTION

1. In relation to the protection of developing countries from adverse effects on their economies or on their export earnings resulting from seabed production, the United Nations Convention on the Law of the Sea refers, in article 151 (1), to international commodity agreements or arrangements through which the International Seabed Authority could take measures necessary to promote the growth, efficiency and stability of markets for those commodities produced from the minerals derived from the international seabed area, namely copper, nickel, cobalt and manganese.

2. In studying the problems which would be encountered by developing land-based producer States likely to be most seriously affected by seabed production with a view to minimizing their difficulties and helping them to make the necessary economic adjustment, the Special Commission has thus naturally been interested in examining the issue of international commodity agreements or arrangements. At the request of the Special Commission, the Secretariat has prepared the present paper outlining the salient features of international commodity agreements or arrangements, reviewing the current trends and developments with regard to commodity agreements or arrangements and describing briefly the commodity agreements or arrangements currently in operation.

3. Since the inception of the United Nations Conference on Trade and Development (UNCTAD) in 1964, most of the international commodity agreements

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or arrangements have been negotiated or renegotiated under its aegis. UNCTAD is the sole United Nations forum for the negotiation of international commodity agreements or arrangements. The present paper, therefore, draws heavily upon the documents of UNCTAD on this topic, as well as additional information provided by UNCTAD.

I. SALIENT FEATURES OF INTERNATIONAL COMMODITY AGREEMENTS OR ARRANGEMENTS

4. The Agreement Establishing the Common Fund for Commodities defines an international commodity agreement or arrangement as any intergovernmental agreement or arrangement to promote international cooperation in a commodity, the parties to which include producers and consumers covering the bulk of world trade in the commodity concerned. The United Nations Convention on the Law of the Sea, when referring to commodity agreements or arrangements in article 151 (1), also reiterates the aspect of the coverage of world market situation as well as that of producer-consumer participation.

5. The distinction between commodity agreements or arrangements is not clear-cut, and in most cases, at a non-formalized level, the two terms are used together. Commodity agreements, established or proposed, are formally referred to as such. In general, commodity arrangements are relatively more flexible in terms of institutional and administrative operation, can take many forms and can have a wider variety of functions.

6. Since the first international commodity agreement, the 1931 International Tin Agreement, some 50 international commodity agreements covering about 15 commodities have been in operation at one time or another. The post-Second World War decades witnessed the largest number of commodity agreements covering the widest variety of commodities. In the recent period, however, for various reasons which will be discussed later, there has been a decline in the negotiation or renegotiation of international commodity agreements.

7. At present, there are eight international commodity agreements in existence, seven of which - involving respectively cocoa, jute (jute and jute products), olive oil (olive oil and table olives), rubber (natural rubber), sugar, timber (tropical timber) and wheat - have been negotiated or renegotiated under the auspices of UNCTAD. The international commodity agreement on coffee, having been originally concluded under the auspices of the United Nations, has been renegotiated outside of UNCTAD.

8. The mineral commodities for which some form of international commodity arrangement exist at the present time include copper, iron ore, lead and zinc, nickel and tungsten. Thus, it can be seen that out of the four mineral commodities of particular interest to Special Commission 1, there are existing international commodity arrangements, essentially in the form of international commodity study groups, on two - copper and nickel. With respect to manganese, intergovernmental efforts, with the participation of producers and consumers, addressing the world manganese situation are under way and may lead

/...

to the establishment of an international study group in the future. Cobalt is not covered by any international commodity arrangement.

A. Objectives of commodity agreements or arrangements and specific mechanisms for achieving those objectives

9. Commodity agreements or arrangements can have a variety of objectives. Usually there are specified measures included in the agreements or arrangements for the fulfilment of the objectives, but more often than not, specific measures are not provided for. Broadly speaking, the objectives of international commodity agreements or arrangements fall under three categories: price regulating objectives; longer-term commodity development objectives; and market transparency augmentation objectives. Price regulatory objectives can themselves be classified in three categories: price stabilization objectives, to reduce market price fluctuations without influencing the underlying price trend; price support objectives, to prevent market prices from falling below an agreed "floor" level; and price-raising objectives, to raise the level, or improve the trend, of market prices. One objective which is relevant for the work of the Special Commission is not directly addressed by commodity agreements or arrangements, that of promoting the stability of commodity export earnings, although indirectly, the successful achievement of any of the above objectives may contribute to the stability, and even growth, of commodity export earnings.

10. In practice, however, the only common objective among the existing commodity agreements or arrangements during the last decade or so has been the augmentation of market transparency. Commodity development objectives are often referred to in the agreements or arrangements, but specific mechanisms are seldom provided for; in the cases where they are provided for, they are usually mechanisms facilitating, rather than directly implementing, development projects. There appear to be two major reasons for this: the difficulty of reaching consensus on what should be done in the longer-term commodity development area, and the difficulty of mobilizing finances the requirements for which can be quite considerable in relation to development projects. International commodity agreements are in general of relatively short duration, usually five years. Although many agreements are renegotiated, and thus can cover a longer period of time through a series of successor agreements, the negotiations pertain to the provisions of each agreement covering the period for which that agreement is valid. This is also a factor which militates against the adoption of effective specific measures to deal with longer-term development problems.

1. Price stabilization

11. Among the three categories of price regulation objectives, the one most commonly addressed is price stabilization. The post-Second World War period up to the 1970s witnessed the establishment and operation of a number of international commodity agreements or arrangements which addressed the price

stabilization objectives providing for specific mechanisms such as buffer stocking, export quotas or production controls - the so-called economic provisions. Thus, the most common type of international commodity agreement was the price stabilization agreement. In recent times, however, for a number of reasons, not the least of which are the decline of commodity prices for a relatively long period of time and the collapse of the International Tin Agreement, there has been a sharp decrease in the number of commodity agreements which include economic provisions. At present, of the eight international commodity agreements in operation, only two, on cocoa and natural rubber, respectively, include economic provisions, and in the case of those two current agreements the economic provisions have been considerably modified from those in the predecessor agreements.

12. The preponderance of the price stabilization agreements up until the recent period was basically a result of the confluence of interests of the consumers/importers on the one side and of the producers/exporters on the other. For consumers, reducing price fluctuations lessens the need to hedge and reduces the possibility of large losses on inventories of stocks of the commodities that are inputs to their industrial activities. More important advantages than these at the micro level may be the ones reaped at the macro level from greater price stability. Large upward fluctuations in primary commodity prices can generate significant increases in domestic inflation in importing countries. Policy makers in the industrial economies usually respond to domestic inflation by deflationary policy adjustments, which reduce production and employment in the processing sectors and lead, via the multiplier effect, to significant losses of output. These losses can be avoided through a reduction of the instability of commodity prices in the upward direction. The major advantages to producers of price stabilization accrue from the reduction in risk accompanying the more certain knowledge of future prices that a price stabilisation scheme provides; from the increased competitiveness of the commodities concerned vis-à-vis substitutes, on account of more stable supply and prices; and from the reduction in structural disequilibrium often occurring via the response of commodity producers to price changes. High prices tend to stimulate over-investment in capacity expansion which, when it comes on stream, leads to excess supplies on the market, thus tending to reduce market price; the response to low prices is then to cut back on investment, which ultimately results in a supply shortage, a return to high prices and the recommencement of the cycle.

13. Prices are central issues of every international commodity agreement, even in the cases when the agreements do not include economic provisions. For commodity agreements primarily aiming at price stabilization, an agreement between producers and consumers concerning prices is a central issue. Usually it means that the two parties agree on an indicative price range.

14. Indicative price range and intervention levels. The specification of the indicative price range provides the upper and lower limits between which the producers and consumers wish to keep the prices during the validity of the commodity agreement. The indicative price range, including its width, of course, depends on the assessment, by both consumers and producers, of the market situation of the commodity concerned, including market tendencies in

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the near future. The difficulties of predicting market conditions have led to the provisions in the commodity agreements in recent years for adjusting the indicative price range during the operation of the agreement, either automatically by defining the indicative price range through a formula relating it to the actual market prices, or semi-automatically by empowering executive bodies to decide on the range, consequent to the changing market prices during the operation of the agreement.

15. In the case of commodity agreements with buffer stocking mechanisms, in addition to the indicative price range, the agreements also specify, within the indicative price range, intervention levels (both upper and lower) of prices; when the actual market prices reach these levels, the buffer stock manager would intervene by selling (at the upper level) and by buying (at the lower level) in order to maintain prices within the indicative range. In some cases, a set of intervention levels is specified where the buffer stock manager may intervene, and another set of intervention levels (higher than the upper level of the former set, and lower than the lower level of the former set) where the manager must intervene. This obviously means that within the indicative price range there is a comparatively narrower price range where no intervention by the buffer stock manager may be called for.

16. The indicative price ranges reflect the intention of the members of commodity agreements to ensure relatively stable prices. The setting of targets and target systems can only be effective if adequate means of realizing the aims are also provided. The most common specific mechanisms that have been used in commodity agreements are export quotas and buffer stocks, and sometimes these two mechanisms are used together.

17. Export quotas. Export quotas, by specifying limits as to the quantity of a commodity which a member is authorized to export, affect prices through their impact on supply; they may also have a short-term "announcement effect" on prices by affecting market sentiment and expectations. Export quotas are generally established each year, on the basis of an estimate of world net import demand and stocks. The distribution of export quotas among members, a critical issue in the negotiation of an agreement, has usually been based on an historical assessment of national export levels or, in some cases, on historical production levels. As a general rule, export quotas are adjusted on an annual or quarterly basis to meet changes in patterns of demand.

18. Buffer stocks. The most common mechanism to stabilize prices has been purchases into buffer stocks when prices are low and sales from buffer stocks when prices are high, to reduce the amplitude of price fluctuations. The buffer stocking mechanism can work through internationally administered stocks held internationally, or internationally administered national stocks. The issue of the financing of buffer stocks has been a central one in the negotiation of agreements incorporating this mechanism. Mainly, two methods have been used to generate this finance: levies on trade in the commodities and direct government contributions, shared between producing/exporting countries and consuming/importing countries. The size of the buffer stock and the corresponding requirements for finances are closely related to the indicative price range and the intervention levels within that range.

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2. Market development

19. A wide range of matters is addressed through the market development provisions in commodity agreements: market access and supply reliability, diversification and industrialization, competitiveness of natural products, market structures and marketing, distribution and transportation, increased consumption, etc.

20. With regard to market access and supply reliability, there are virtually no international commodity agreements or arrangements that provide for specific mechanisms, other than monitoring the situation and calling upon trading partners to avoid measures that hinder international trade.

21. Diversification is intended to address the structural problem in the commodity market. Production of alternative commodities is encouraged, sometimes through the provision of loans for projects related to those commodities.

22. Industrialization is attempted through the encouragement of downstream activities, especially the processing of the commodities concerned. The means of promotion of industrialization include prohibition of discriminatory treatment, improvement of production and processing methods so that by reducing costs the commodities concerned can be more competitive with alternative products.

23. Improved competitiveness of commodities is attempted through control of quality, providing standards for labelling and packaging and the promotion of an increased commodity content of marketable products.

24. Promotion of consumption is attempted through removal of measures which may have an adverse impact on the quality of the commodity, removal of obstacles to consumption, encouraging measures regarding customs duties, internal taxes, fiscal charges and quantitative and other controls. Significantly, in some cases commodity agreements provide for measures and finances aimed at developing ways to increase consumption, including the formulation of projects for research and development.

3. Improved market transparency

25. Measures aimed at improving market transparency include providing services from information networks and statistical databases, including the collection, processing, dissemination and exchange of detailed statistics, continuously monitoring and reviewing the market situation, carrying out studies on special issues and providing a forum and a framework within which the parties on both the demand and the supply sides could carry out consultations, exchange views and ideas and review national and international policies.

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26. In terms of the three sets of basic objectives - price stabilization, commodity development and market transparency - there are examples of commodity agreements or arrangements which strive to achieve one or more of the three sets of objectives. However, a common feature of all the agreements or arrangements is the emphasis on improving market transparency.

II. RECENT TRENDS AND DEVELOPMENTS WITH REGARD TO COMMODITY AGREEMENTS OR ARRANGEMENTS

27. In recent years there have been significant changes in the field of international commodity agreements or arrangements. These changes are reflected in a number of ways. There appears to have been a decline in intergovernmental efforts in respect of cooperation with regard to commodities. In the cases where intergovernmental efforts have been carried out, the outcomes of such activities constitute commencement or continuation of work related to the review of the market situation and the exchange of information in an intergovernmental body rather than the establishment of more comprehensive and directed international commodity agreements or arrangements. Formalized commodity agreements or arrangements themselves have shifted emphasis towards market transparency from price regulation or price stabilization. In recent years commodity agreements with economic provisions involving specific mechanisms to stabilize prices have been few, and in such cases the economic provisions have been considerably modified from those in the respective predecessor agreements. Most commodity agreements or arrangements include commodity development as an objective but seldom provide for specific measures to achieve that objective. In the cases where specific measures are provided for, they usually have an indirect rather than direct effect on the market situation, and mobilizing adequate finances for these measures has posed a tremendous problem.

28. Various reasons have been provided by analysts for these changes. Focusing on the recent experience of the operation of international commodity agreements, the collapse of the Sixth International Tin Agreement in 1987 is considered to have had a significant influence on intergovernmental efforts in the field of commodities. As is well known, the basic problem in the case of tin was that when the price of tin was falling, purchases into the buffer stock became unworkably inadequate in the face of a price decline which turned out to be persistent, and for the same reason the large amount of borrowing that had already been incurred to make purchases into the buffer stock could not be repaid.

29. In addition to the collapse of the International Tin Agreement in 1987, the recent period has witnessed other unfavourable experiences with the operation of commodity agreements, e.g., the inability to resume negotiations for a sugar agreement with economic provisions, the blockage in the operation of the 1986 Cocoa Agreement as a result of disagreement between exporters and importers on implementation of certain provisions of that Agreement, and indications of growing dissatisfaction on the part of a number of countries with the operation of the Coffee Agreement.

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30. The collapse of the Tin Agreement had one immediate impact on the provisions of the commodity agreements renegotiated in the wake of it: it led to the complete elimination of provisions for recourse to commercial borrowing to provide additional finance for buffer stock operation, despite the fact that the cocoa and natural rubber agreements envisaged a different type of buffer stock operations from that under the Tin Agreement - simultaneous buying and selling - which contributed to the collapse of that agreement. Even in the renegotiation of an agreement containing no market intervention mechanisms such as that relating to olive oil, there was an insistence on completely eliminating all references to the possibility of commercial borrowing by the implementing body, and on including specific provisions concerning the limitation of the financial liability of members.

31. The experience of the tin agreement also led to modifications of the price provisions in the commodity agreements renegotiated after 1987, intended to address a persistent downward trend in price. In the renegotiation of the Cocoa Agreement, this was reflected in the introduction of semi-automatic price adjustments in relation to market price movements and to buffer stock operations, and in the elimination of the very concept of a "minimum" price level below which market prices should not be allowed to fall. In the renegotiation of the 1979 Natural Rubber Agreement, the concept of a minimum price level not subject to any semi-automatic adjustment was retained; however, a greater degree of automaticity was introduced into the adjustments of the intervention levels.

32. The sharp decline in the growth rate of consumption of most metals in the last two decades as well as the fall in prices have significant implications in respect of the attitude of the international community regarding commodity agreements or arrangements.

33. Various analyses of the causes of the decline have been offered. While there is not much debate about the impact of the slowdown in the growth of the world economy, there is also a prevalent view that structural changes, especially the declining intensity of metal use, are significant factors. The changes in the intensity of metal use are an outcome of two aspects: changes in the product composition of income and in the material composition of products. The product composition of income in developed economies has been shifting in favour of less metal-intensive goods, partly because of sectoral shifts from agriculture and manufacturing towards services, and also partly because of intrasectoral shifts within the manufacturing sector towards high-technology products. The material composition of products has been changing as a result of metal-saving innovations and substitutions. It may be added that some analysts contend that a rising intensity in metal use in developing countries as their economies expand, cannot be assured because there is evidence that those countries as they develop are "leap-frogging" the old metal-intensive technologies which the industrialized countries used in their early stages of development, and are adopting newer, more metal-saving technologies.

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34. The above contentions about structural changes in metal demand have very significant implications for the role of international cooperation, and thus of commodity agreements. Developed economies which are also the dominant consumers of metals do not view these structural changes as undesirable in the overall sense, and they also have the ability to adjust to such changes relatively easily. Thus, in the face of structural changes, these countries remain unconvinced about any international action which directly or indirectly supports prices at levels which are inconsistent with these changes. Besides, the question is often raised as to what measure is most effective in dealing with structural changes.

35. While the above factors with regard to the commodity situation may not appear favourable for the establishment of international commodity agreements or arrangements, there are certain developments and considerations that may call for intensified producer-consumer cooperation in the field of commodities.

36. Focusing on the recent experience of the operation of commodity agreements, one can point to the 1979 Natural Rubber Agreement as an example of a price stabilization agreement that has been successful in defending prices at both their upper and lower limits. While the renegotiation of the Agreement proved to be long and arduous, it eventually became possible to bring the negotiations to a successful conclusion in the wake of the tin crisis. Such was also the case with the renegotiation of the Cocoa Agreement. These cases attest to the strength of the commitment of Governments to the concept of international commodity agreements as instruments of international cooperation in the field of commodities. In the case of the tin agreements also, it can be pointed out that the commodity which experienced the longest coverage through international commodity agreements is tin, and the relative success of the six successive tin agreements over the period from the 1930s to the mid-1980s is well recognized.

37. In the field of commodity agreements or arrangements, continued commitments of the international community are undiminished. This is reflected in every UNCTAD session, the latest being UNCTAD VII, held in 1987 (UNCTAD VIII is scheduled to be held in 1992). In that session, the Conference agreed that the operation and functioning of existing commodity agreements should be improved. It also urged that negotiations or renegotiations of new international commodity agreements or arrangements should cover agreements or arrangements containing, as appropriate, economic provisions, or developmental measures, or measures to improve market transparency, and it added that such agreements or arrangements should receive the participation of important producers and consumers.

38. UNCTAD promotes intergovernmental consultations on individual commodities, aimed at reviving producer-consumer cooperation towards the strengthening of commodity markets, including, where feasible and relevant, price stabilization, improved market transparency and enhanced commodity development.

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39. The entry into force of the Common Fund for Commodities and the commencement of its operation are considered to be factors that will give a boost to the establishment of international commodity agreements or arrangements.

40. Provision has been made so that the facilities of the First Account of the Common Fund could be used under specified conditions by international commodity organizations established to implement the provisions of international commodity agreements or arrangements providing for either international buffer stocks or internationally coordinated national stocks.

41. With regard to the Second Account of the Common Fund, provision has been made for financing from that Account, under specified conditions, of projects in relation to commodity development, jointly sponsored and followed up by producers and consumers within the framework of an international commodity body (ICB). The eligibility criteria for international commodity bodies are spelled out in Schedule C to the Agreement Establishing the Common Fund. Such a body must, inter alia, be concerned with the trade, production and consumption aspects of the commodity in question, on a continuing basis. This can be viewed as providing an impetus for the establishment of international commodity agreements or arrangements including commodity development measures, and the intergovernmental bodies implementing such agreements or arrangements to qualify as eligible ICBs.

42. With respect to the commodity agreements or arrangements negotiated or renegotiated in recent years, it can be added that in most cases, they included provisions related to commodity development. Thus, in those cases the commodity agreements constitute significant intergovernmental instruments fostering growth in the commodity markets.

43. At the very least, all current agreements, including those on wheat, olive oil and sugar, continue to play a positive role in providing forums for consultations between producers and consumers and also provide for valuable sources for market information.

III. EXISTING INTERNATIONAL COMMODITY AGREEMENTS OR ARRANGEMENTS

A. International commodity agreements

1. Cocoa

44. The International Cocoa Agreement, 1986, which had entered into force provisionally in January 1987, was due to expire on 30 September 1990. It was extended "in part" for a period of two years from 1 October 1990.

45. The economic mechanism of the Agreement has, in effect, been inoperative since February 1988, when the buffer stock held under the Agreement, financed by a levy, reached its maximum capacity of 250,000 tons. During the period of extension, the buffer stock will be maintained and, with the exception of

certain provisions relating to the maintenance of the buffer stock, the economic provisions of the Agreement were not extended. The second line of price defence - the withholding scheme - under which a total of 120,000 tons of cocoa could be withheld, was not put into effect under the 1986 Agreement.

46. However, at the time of the adoption of the decision with regard to the extension, the members of the Agreement indicated the necessity of continuing international cooperation in all sectors of the world cocoa economy and also appreciated the need to continue the search for adequate solutions to the problems of the world cocoa economy in the framework of a new international cocoa agreement.

2. Coffee

47. The International Coffee Agreement, 1983, was due to expire on 30 September 1989. After two years of negotiations during which producers and consumers failed to work out a new Agreement, the International Coffee Council decided, in July 1989, to extend the 1983 Agreement for a period of two years to 30 September 1991.

48. During the period of the extension, the provisions related to the regulation of exports and imports are in suspension. The quotas under the Agreement have been suspended since July 1989.

3. Jute

49. Prior to the expiration, due in January 1991, of the International Agreement on Jute and Jute Products, 1982, at a United Nations Conference convened under UNCTAD auspices, producer countries representing 99 per cent of world jute exports and consumer countries representing 63 per cent of world jute imports adopted a successor agreement in November 1990. The new Agreement will be valid for five years, with a possibility of two extensions of two years each.

50. The objectives of the new Agreement include maintaining an international framework for efforts to improve structural conditions in the jute market and to enhance the competitiveness of jute and jute products. Two important characteristics of the new Agreement point to the emerging trends of international commodity agreements. The first is the emphasis placed on environmental aspects, which should be given due consideration in the activities of the International Jute Organization, the secretariat organization for the Agreement, particularly by fostering awareness of the environmentally beneficial characteristics of jute as a natural, biodegradable product. The second is the identification of human resources development in the jute economy as a priority area.

4. Olive oil

51. The 1979 International Olive Oil Agreement was renegotiated under the auspices of UNCTAD in July 1986. The provisional entry into force of the International Agreement on Olive Oil and Table Olives, 1986, was achieved in January 1987, and it came into full force in December 1988. The current Agreement is the fourth in a series of similar instruments extending back to 1959, and was due to expire on 30 June 1991, but may be extended for not more than two periods of one year each.

52. As with preceding olive oil agreements, the current one, while referring to the need to prevent excessive fluctuations in prices, which must be at levels that are remunerative and just to producers and equitable to consumers, contains no economic provisions aimed at stabilizing prices or limiting exports or production. Rather, its objectives include international cooperation and concerted action to foster the coordination of policies governing the production, industrialization and marketing of olive oil; as well as modernization of the techniques of cultivation to improve quality and reduce production costs and promotion of world consumption of olive oils and table olives. A feature of the Agreement, intended to facilitate the achievement of many of the above objectives, is the Publicity Fund, with resources of $0.6 million a year, financed by the members of the Agreement and placed at the disposal of the International Olive Oil Council, the implementing body for the Agreement.

5. Rubber

53. The International Natural Rubber Agreement, 1989, was the outcome of the renegotiation of the 1979 Agreement in March 1987 (which was due to expire in October 1987) and entered into force in December 1989 for an initial period of five years.

54. It may be added that before the adoption of the 1987 Agreement there were intense negotiations extending over a period of two years to resolve the differences between producers and consumers, especially with regard to the specification of the reference price which determines the intervention levels, the mechanisms for the revision of the reference price, the relevant market indicator prices and the currency to be used for pricing purposes.

55. The Rubber Agreement is one of the existing international commodity agreements which contain economic provisions for the purpose of price stabilization. It provides for a buffer stocking mechanism which is the only instrument, thus excluding export quotas or production control, and for the intervention by the buffer stock manager, through the buying or selling of rubber, which is activated consequent upon specified extents of fluctuation of the market indicator price above or below the specified reference price. Governments of importing countries share the cost of the buffer stock equally with exporting countries through direct cash contributions. Within each group, financing is shared in accordance with members' shares in trade. There

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are also provisions for the periodical adjustment of the reference price on the basis of the average of the daily market indicator price.

6. Sugar

56. The International Sugar Agreement, 1987, a renegotiated version of the predecessor 1984 Agreement, was adopted in September 1987 and entered into force provisionally in March 1988. At that time, exporting and importing members of the Agreement represented about 80 per cent of world trade in sugar. The Agreement remained in force until 31 December 1990 and might be extended further for a period not exceeding two years.

57. Like the 1984 Agreement, the 1987 Agreement does not contain economic provisions but aims at furthering international cooperation in connection with world sugar matters and related issues. It also seeks to encourage the consumption of sugar and to facilitate trade by collecting and providing information on the world sugar market and on other sweeteners.

58. Under the Agreement, a Market Evaluation, Consumption and Statistics Committee was set up in 1988 with the objective of improving the flow of information, for both the short and the long term, and of providing a forum for debate. The Committee meets relatively frequently and produces a wide range of studies, monthly and quarterly market reports and short-term projections, and also holds deliberations on national sugar policies.

59. The International Sugar Organization, which has the secretariat responsibilities for the Agreement, is in consultation with the Common Fund for Commodities with regard to its designation as an ICB for purposes of sponsoring projects for financing under the Second Account of the Common Fund. A number of project proposals have been submitted to the International Sugar Council, the implementing body for the Agreement.

60. One main objective of the 1987 Agreement is to provide an appropriate framework for the preparation of a possible new international sugar agreement with economic provisions. The last International Sugar Agreement with such provisions was adopted in 1977 and remained in force until 1984. Its main objective was to stabilize price levels through a combination of export quotas and nationally held but internationally coordinated stocks.

7. Tropical timber

61. The International Tropical Timber Agreement, 1983, entered into force in April 1985. As currently extended, the Agreement expires on 31 December 1992. One further extension of up to two years is possible under the Agreement.

62. The Agreement also exemplifies the trend of international commodity agreements of taking into account environmental aspects. In May 1990, the

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International Tropical Timber Council adopted the Guidelines for Sustainable Management of Natural Tropical Forests and recommended them as an international reference standard to members and the international community in general as a major contribution towards the goal of sustainable utilization and conservation of tropical forests and their genetic resources.

8. Wheat

63. In March 1986, the International Wheat Council renegotiated the then existing International Wheat Agreement. The new Agreement was due to expire on 30 June 1991. Importing members of the Council indicated that most of them favoured extension of the current agreement by the Council for two more years. Export members, while currently not favouring a decision (as of July 1990), also felt that the Agreement should continue after 1991.

64. The International Wheat Council requested its secretariat to keep in close contact with the authorities of the Common Fund for Commodities.

B. International commodity arrangements

65. One of the most common forms of international commodity arrangements, especially in minerals, is the international commodity study group.

66. With regard to the commodity study groups, one important issue which is usually very intensively discussed is whether the functions of a study group should be limited to those related to market transparency alone, or whether the functions could be broadened to include some kind of role in the field of market development. Consuming countries in general prefer the former approach, while producing countries show a preference for the latter.

67. The functions of study groups aimed at enhancing market transparency usually involve exchanges of information and views among members, collection and dissemination of statistics and, in some cases, of improved quality and coverage. The functions related to market development usually involve developing, and in a few cases developing as well as implementing, projects on ways and means of increasing the demand and expanding the market for the commodity concerned. The functions of the international study groups on two metals of particular interest to the Special Commission are discussed below.

1. Copper

68. The terms of reference of the International Copper Study Group were adopted in the second session of the United Nations Conference on Copper, held in 1989 under the auspices of UNCTAD.

69. The functions of the Study Group include consultations and exchanges of information among members in the international copper economy; improvement of

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copper statistics; undertaking of regular assessments of the market situation and outlook for the world copper industry; undertaking of activities related to efforts pursued by other organizations aimed at developing the market and contributing to the demand for copper.

2. Nickel

70. The United Nations Conference on Nickel held its first part in October-November 1985 and its second part in April-May 1986, in which the terms of reference of the International Nickel Study Group were adopted.

71. The International Nickel Study Group is an autonomous body. Its functions include the continued monitoring of the world nickel economy and its trends; establishing, maintaining and continually updating a statistical system in world production, consumption and stocks of all forms of nickel; undertaking studies in accordance with the decisions of the Group; considering special problems or difficulties which exist or may be expected to arise in the international nickel economy; and conducting consultations and exchanges of information between members. The terms of reference of the Study Group do not include specific provisions for market intervention.

72. In May 1990, 11 States, accounting for over 60 per cent of the world trade in nickel, having adopted the terms of reference of the Study Group, decided to put them into effect amongst themselves in whole. Consequently, the inaugural meeting of the Study Group was held at The Hague in June 1990. The Group established its headquarters at The Hague, and meetings on a regular basis are expected.

C. Other forms of producer-consumer cooperation

73. For a number of individual commodities not covered by international commodity agreements or arrangements, there is a wide diversity of intergovernmental activities dealing with the world market situation in the respective commodities, and also fostering international producer-consumer cooperation. Among agricultural and related commodities, bananas, cotton and cotton yarns, hard fibres and products (sisal and henequen, abaca and coir), tea and vegetable oils (including coconuts and coconut oil, groundnuts and groundnut oil, and palms and palm oil) fall under this category. The category of mineral commodities includes bauxite (including alumina and aluminium), manganese and phosphates (and sulphur). Correspondingly, there are a number of intergovernmental bodies, some covering producers, regionally or globally, and others covering both producers and consumers. These bodies constitute forums for consultations and exchanges of information; in most cases, they foster promotional activities and research and development activities. Many of these bodies are also exploring the possibilities of being designated as eligible international commodity bodies in order that they may sponsor projects on the respective commodities which may be financed through the Second Account of the Common Fund for Commodities. Some of these bodies are

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also engaged in ongoing periodical efforts with a view to studying possibilities for the establishment of international commodity agreements or arrangements in the respective commodities in the future.

74. With regard to commodities not covered by international commodity agreements or arrangements, at UNCTAD VII the Conference requested the Secretary-General of UNCTAD to convene, or to resume, in accordance with the results of comprehensive consultations with producers and consumers, ad hoc review meetings and/or preparatory meetings on individual commodities. This is pursuant to the recognition by the Conference of the need for a better functioning of commodity markets and the desirability of achieving stable and more predictable conditions in commodity trade, including the avoidance of excessive price fluctuations and the search for long-term solutions to commodity problems, as well as the agreement in the Conference that, where appropriate and feasible, producer-consumer consultations and cooperation should be enhanced, strengthened or established.

75. In response to specific requests, the UNCTAD secretariat pursues a process of consultations (variously among producers, among consumers and among producers and consumers), ad hoc review meetings and/or preparatory meetings on individual commodities, as the situation warrants. Wherever appropriate, the existing intergovernmental bodies are also involved in the UNCTAD process. The status of work accomplished in the process varies from commodity to commodity. Since manganese is of interest to the Special Commission, its status is discussed below.

1. Manganese

76. There is currently no international forum for discussions between producers and consumers of manganese. Initially a series of consultations was held with manganese producing/exporting developing countries. Subsequently, at those countries' request, developed producing/exporting countries were also included. The consultations pointed to a broad acceptance of the idea that international cooperation should take the form of a study group type of arrangement. After the consultations, at the request of the participants, UNCTAD sent a note to all producing Governments, setting out the various alternative scenarios of study group arrangements previously discussed or negotiated in relation to other mineral commodities. This was intended to facilitate decision on the most suitable arrangement. If this results in an agreed producer position on a study group arrangement, a joint producer/consumer meeting would be organized.

IV. CONCLUDING REMARKS

77. The principal reason for Special Commission 1 to study international commodity agreements or arrangements is to assess the potentials of such agreements or arrangements for minimizing the difficulties which might be encountered by developing land-based producer States as a result of seabed production and helping them to make the necessary economic adjustment. At this time, such an assessment is extremely difficult. International commodity agreements or arrangements and, in a broader framework, international cooperative efforts of producing and consuming States, have undergone significant evolution in the past, especially in the recent period. The evolutionary process is likely to be influenced in the future in diverse and divergent ways by various factors. In the future, as and when seabed production becomes imminent, what forms international commodity agreements or arrangements would take, what they would aim to achieve and what they would actually achieve and how the actual achievements would relate to the minimization of difficulties of developing land-based producer States resulting from seabed production are issues to which no definitive answers can be given at this time.

78. Under the circumstances, the Special Commission and, in the future, the International Seabed Authority may benefit most by keeping abreast of the developments with regard to international commodity agreements or arrangements and, in due time, making further assessments, in the context of their own objectives, as to the feasibility and effectiveness of such agreements or arrangements.

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PREPARATORY COMMISSION FOR THE INTERNATIONAL
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PROJECTION OF FUTURE DEMAND, SUPPLY AND PRICE OF THE METALS CONTAINED IN POLYMETALLIC NODULES

Background note by the Secretariat

INTRODUCTION

1. In undertaking studies on the problems which would be encountered by developing land-based producer States likely to be most seriously affected by the production of seabed minerals, Special Commission 1 felt the need to address the issue of the future market situation with regard to copper, nickel, cobalt and manganese, the metals deemed likeliest to be produced from polymetallic nodules when they would be mined from the seabed in the future. Consequently, the Commission requested the Secretariat to prepare a background paper on the issue of projection of future demand, supply and price of these four metals. The present document has been prepared in response to that request.

2. The nature of the interest of Special Commission 1, and for that matter, of other organs of the Preparatory Commission, in the projection of future market situation evolved in a significant manner over time. As the realities of the metal markets during the late 1970s and the 1980s and of the technology development with regard to seabed mining pointed to the fact that seabed mining might not occur before the year 2000 and that the earliest possible commencement of seabed mining might be in the first, or even the second decade of the next century, the interest of Special Commission 1 concentrated less on the projections themselves or on carrying out projection exercises, and more on the understanding of what is involved in projection exercises and on monitoring trends and developments in the metal markets. The latter is essentially for the purpose of keeping abreast of the metal market situation

and of positioning the International Seabed Authority for taking necessary decisions or actions at the appropriate time when seabed mining becomes imminent.

3. This evolution of approach is also evident in the work of the Chairman's Advisory Group on Assumptions established in 1986 with a mandate entrusted to it by Special Commission 2 to monitor the economic conditions for seabed mining so that it could advise the Special Commission on when it might be possible to revise the current model of the Preparatory Commission for seabed mining contained in the Australian study LOS/PCN/SCN.2/WP.10 and Add.1. The Group reviewed periodically the short-, medium- and long-term forecasts for the production, consumption and prices of the four metals. At the end of the last session, it reported, "...The Group feels that it is necessary to emphasize that the work of the Group needs continuity. In this connection the Group suggests that during the period before entry into force of the Convention, its successor should concentrate, inter alia, on periodic analysis of world markets and metal prices, their trends and forecasts; collection of information on and evaluation of technological developments, assessment of the state of knowledge of deep-sea environments and possible impacts of seabed mining activities." (LOS/PCN/L.100, para. 29).

4. In preparing the present document, the Secretariat drew upon the work of the Group, and utilized the combined base of data, information, research and analysis on projection of demand, supply and price of the four metals concerned, which has been developed in the Secretariat to service Special Commissions 1 and 2 and other organs of the Preparatory Commission. The issue of projection was also discussed in Special Commission 1 in considerable length. Summaries of such discussion can be found in the statements of the Chairman of the Special Commission to the Plenary (see, in particular, LOS/PCN/L.58, paras. 20-23, and LOS/PCN/L.63, paras. 4-8). The present paper builds upon such discussion as well. Pursuant to the above considerations, the present paper discusses the essentials of the projection exercises, highlights what is to be monitored in relation to projections, and how best the monitoring can be achieved. Long-term projections of demand/supply/price of copper, nickel, cobalt and manganese, that are available currently are also addressed briefly with a view to presenting a broad overview and giving an idea about the various methodologies used in projection exercises.

I. ESSENTIALS OF PROJECTION EXERCISE

5. The issue of projection of future demand, supply or price of metals was addressed even during the Third United Nations Conference on the Law of the Sea. The often-quoted statement is found in the Progress Report of the Sub-Group of Technical Experts of Negotiating Group 1 of the Third United Nations Conference on the Law of the Sea: "The experts agreed that, by definition, the future is unknown and unknowable, but it was recognized that some statements about future consumption or production ... are more likely to be true than others". 1/ However, although the latter part of the quotation rules out extremes, the range of likelihood can be quite wide indeed.

6. The basic process for projecting future demand, supply and price of metals is (a) to examine the past for patterns and relationships, and (b) to develop methodologies that incorporate the lessons of the past with the situation in the future. It can be easily seen why and how a wide degree of variability can arise in the outcomes of projection exercises. First, the past patterns and relationships in the real world are many; projection exercises can vary depending on which patterns and relationships are focused on and to what extent. Secondly, the nature and degree of application of the lessons of the past to the future depends on the judgement of the projection expert, and such judgement can be different for different experts. Thirdly, and here one projection exercise becomes part of another projection exercise and thus, the extent of variability can multiply, the ideas about the future situation where the lessons of the past would be applied can be very different indeed from one projection expert to another. Fourthly, methodologies can vary among projection experts.

7. The issue of variability in the outcomes of projection exercises become much more pronounced when certain trends and developments in the past and the present point to considerable uncertainties with regard to the future, in contrast to the relative stability in the past and the expectations of relative stability in the future. There are reasons, to be discussed later, to believe that such uncertainties characterize the current metal market situation.

8. In addition to variability, there can be consistent underlying biases upward or downward in the projection exercises depending on the circumstances at the time of projection. In May 1986, the United States Bureau of Mines (USBM) and the Henry Krumb School of Mines of Columbia University held a conference on changes in the global metals industry. Reporting on the conference, David A. Gulley of the Henry Krumb School of Mines, inter alia, adds a cautionary note: "Retrospective studies of forecasting document the (perhaps obvious) point that the degree of optimism in the forecast matches the degree of optimism during the period the forecast was made". 2/ It goes without saying that the statement is equally valid regarding the degree of pessimism.

Factors on which projections depend

9. The future demand, supply and price of a metal can be projected separately and independently, but usually a more consistent approach is to project future demand, supply and price together within the framework of an overall equilibrium model. In the latter approach, at the equilibrium, supply equals demand, and price takes up the equilibrating role.

10. There are two basic ways future supply/demand/price of a metal are projected - one is to extrapolate the past time-trend to the future, and the other is to estimate future supply/demand/price as resulting from the influences of appropriate determining factors.

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11. In extrapolating the time-trend, a period of recent past is chosen, the underlying movement over time of supply/demand/price (growth/decline/constancy) during that period is estimated and, assuming that whatever underlying factors were behind the past experience will also repeat themselves in the future, the estimated rate of movement is applied to future supply/demand/price. The major problem with this approach is that the underlying factors in the future may be quite different from those in the past. Another important problem is that past experience varies in the different past time periods and thus, depending on the time period chosen, the future extrapolation will also be different.

12. The time-trend approach to projection has some advantages, however. It is a simple approach, involves considerably less effort and cost compared to the other approach, and avoids the problems of dealing with determining factors. These were the main reasons that this approach has been incorporated in article 151 of the United Nations Convention on the Law of the Sea, when the issue of future nickel consumption has been addressed. (Consumption is the main component of metal demand, demand being equal to consumption - changes in consumers' stock.)

13. The approach involving determining factors requires a number of basic steps. First, important factors that have influence on metal demand/supply/price are identified. Secondly, the nature and extent of influence these factors had on metal demand/supply/price in the past are measured. Thirdly, future values of the determining factors are obtained. Finally, on the assumption that the determining factors would operate in the future as they did in the past, future demand/supply/price is estimated.

14. It can be easily seen that the estimates/projections can vary according to differences in the determining factors selected, variations in the measured natures and extents of their influences, differences in the future values of the determining factors, and the degree of future stability in the structure of influence of the determining factors. In addition, determining factors can be different for short-, medium- or long-term projections.

Factors influencing future demand

15. On the metal demand side, several determining factors can be identified. The four metals, copper, nickel, cobalt and manganese, are used as inputs in such industries as chemical, electrical, electronics, energy, machinery, steel and transportation industries. Thus, the demand for these metals is dependent on the demand for the end-products. One approach, sometimes known as the "bottom-up" approach, recognizes the input requirements of each of the end-use industries separately. This approach requires considerable effort and data. An alternative approach, sometimes known as the "top-down" approach, is to view the demand for metals to be dependent on overall industrial production. As income levels rise, consumption of metals rises too. Thus, gross national product (GNP) or per capita GNP can be thought of as a determining factor. Finally, the price of the metals and price of their substitutes have an influence on metal demand. Other things remaining the same, it is expected

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that a higher price of the metals will lead to a lower demand, and a lower price of the substitutes will encourage demand for the substitutes at the expense of the metals in question.

16. Whatever the determining factors selected to estimate demand for metals (levels of production in end-use industries, overall industrial production, GNP, substitutes and their prices), future values of these factors have to be obtained. Usually, these values are obtained by extrapolating the time-trend of past values, or by making some assumptions, directly or indirectly, regarding the behaviour of these factors in the future.

17. Finally, judgement has to be made regarding the nature and extent of influence of the selected determining factors in the future as in the past.

18. Demand for metals on a global scale is usually estimated by dividing the world into country groups. Such disaggregation is particularly important since the behavioural responses of the various country groups can be expected to differ, and since technologies and tastes can also differ.

19. Having discussed the determining factors and the structure of their relationships with metal demand, which by themselves can be the source of considerable variability among various projections of future metal demand, certain areas of uncertainties which appear to be uniquely characteristic of the current situation with respect to the four metals concerned, especially copper and nickel, need to be pointed out. These uncertainties add significantly to the difficulties of projecting future demand at this time.

20. These uncertainties pertain to: (a) the structural relationship of the metals in the production of end-use products; (b) the structural relationship of the end-use products with general economic condition; and (c) the structure of the general economic condition in the global economy itself.

21. There is a widespread perception that at present structural changes are occurring in all the above three avenues, in which case projection of future demand for metals based on the soon-to-be-defunct structural relationships carries very little meaning or, at the least, fundamental changes are occurring which may or may not result in structural changes, in which case before carrying out any projection exercise, it behoves that how these fundamental changes culminate be monitored. "A profound difference looms between demand responding abnormally to the usual market forces, and responding normally but to abnormal market conditions." 3/ The former involves a structural change, the latter a transient phenomenon in the unchanged structure. The current situation happens to combine both phenomena, and it is extremely difficult to gauge the relative importance of the two for the future. The worst case scenario would be to assume that structural changes have already occurred, and to project future demand on the basis of that changed structure.

22. As to the level of metal input requirements in end-use products, there is evidence that substitution is occurring by other metals or materials for the four metals in question in some end-uses (e.g. replacement of copper wire by fibre optics in telecommunications), and also that certain technologies have been introduced for certain products, which use less of the metals in question as input per unit of output (e.g. stainless steels with lower nickel content). However, new uses of the metals in question have also occurred in the recent period. In any case, it is not conclusive whether the overall metal composition of products has changed significantly and irreversibly as a result of metal-saving substitutions and technology innovations.

23. With regard to the product composition of income, there is evidence that in developed economies there is a shift in favour of less metal-intensive goods, partly because of sectoral shifts from agriculture and manufacturing towards services, and also partly because of intersectoral shifts within the manufacturing sector towards high-technology products. But it is not quite clear whether the product composition of income viewed globally has changed structurally, or what the relative impacts of declining share but growing absolute levels of metal-intensive goods, are.

24. As to the structure of the global economy, considerable uncertainties exist regarding: (a) the long-term growth rates of developed economies; (b) the length and the nature of outcomes of the transition of former centrally planned economies to market economies; and (c) the long-term growth rates of developing economies, especially the larger and relatively more industrialized ones, such as Ghana and Nigeria in Africa, China, India, Indonesia, Malaysia, the Philippines and Thailand in Asia, and Brazil and Mexico in Latin America. A related uncertainty is with regard to use of metal per unit of GNP as income increases in former centrally planned economies and developing economies. While there is evidence that as income rises, metal use per unit of GNP rises up to a certain limit, there is also some evidence that these countries as they develop further are "leap-frogging" the old metal-intensive products and technologies which the industrialized countries used in their earlier stages of development, and are adopting newer, more metal-saving products and technologies.

25. It can be expected that in the near-term future these uncertainties would play themselves out and clearer pictures and directions would emerge. In this perspective, it appears most logical and fruitful for the Authority during its early period of functioning, to monitor the outcomes of these uncertain and unpredictable phenomena.

Factors influencing future supply

26. A picture of the future supply situation for copper, nickel, cobalt and manganese can be obtained from three types of information: plans for expansion of the existing mines and plans for development of new mines, estimates of worldwide reserves of these minerals, and estimates of worldwide resources of the minerals. The worldwide resources of a mineral consist of all deposits, whether discovered or not, that may be exploited now or in the

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foreseeable future. The resources of the mineral that are both "identified" and "economic" comprise the reserves. The estimates of reserves and resources can vary according to the judgement made by the estimator regarding the geological and economic characters of the deposits. It should be kept in mind that the reserve and resource estimates are not static. Reserves are increased as new technology reduces the costs of production or when metal prices rise faster than costs of production in a stable fashion. Again, reserves are also increased as exploration makes it possible to classify previously undiscovered deposits to identified deposits.

27. Expansion and new mine development requires about five or six years. So, for the near future, new supplies will be coming from the mines for which construction is already in progress. There is public information available about these, and supply of metals in the near future can be fairly accurately predicted.

28. In the medium-term future, the most likely areas where mines will be developed are the areas that have reported reserves. The exploration for new deposits is a long process, often taking 10 or more years. Thus, areas with known reserves are the ones most likely to be exploited. Reserve estimates, therefore, can give us an idea about the future supply situation in the medium term.

29. In the distant future, the estimates of reserves should be supplemented by the rest of the resources to indicate possible areas of mineral development. Thus, in order to obtain an idea of the long-run supply situation, worldwide resource estimates should be examined.

Factors influencing future price

30. Price forecasts are usually arrived at through an exercise involving the balance of future demand and supply and/or assuming a process for price formation. In order to obtain estimates of future prices from a demand/supply exercise, it is necessary to postulate a relationship between the reserves and resources and price, i.e., to indicate at what price those reserves and resources will be converted to supply in the market. Price forecasts, thus, vary according to the estimates about costs of production from various deposits and the assumptions on price formation.

II. CURRENTLY AVAILABLE PROJECTIONS AND THEIR METHODOLOGIES

31. During the rapid expansion of the world economy after the Second World War, there was uncertainty and concern about the capability of the minerals industry to supply raw materials at the rates needed to maintain industrial expansion. During the 1970s, experience with the Organization of Petroleum Exporting Countries caused a shift in attention from resource adequacy to supply availability but no reduction in emphasis on the importance of the supply of raw materials. These concerns over the adequacy and availability of supplies of raw materials led Governments and industries to commission

numerous studies of the markets for minerals and metals. Some studies focused on the distribution of resources and processing capacity, some on the material requirements of the industrial economies, and some attempted to link supply and demand in complex models designed to project the production, consumption and price of metals decades into the future.

32. The decade of the 1980s began with a strong emphasis in industrialized countries about the uncertainty of the adequacy and availability of minerals and metals. Within several years, however, these concerns faded away. As concern over mineral availability declined, so did support for the analysis and projection of metals markets. To a degree this reflected dissatisfaction with the results of predictive models, but more importantly, it reflected the experience of the past decade that in spite of concerns about the global adequacy and availability of supplies, demand appeared to be more than adequately met. Another important factor was that prospecting and exploration for minerals that began under the expectation of continuation of the high rate of growth of minerals consumption of the 1950s and 1960s identified resources far in excess of the needs resulting from the significantly reduced rate of growth of mineral consumption experienced in the late 1970s and throughout the 1980s.

33. Still, the evaluation of policies for developing and managing mineral resources in the future requires the evaluation of the markets for those minerals. While fully integrated predictive models that attempt to project demand, supply and prices for metals and minerals have lost their popularity, research has continued in the study of the future mineral situation, especially mineral demand, and the knowledge of this research can be of interest to the Special Commission, although in very rare cases the projections go beyond the year 2000.

34. A variety of approaches using sophisticated models and projection methods have been used to make projections of the future demand for the four metals concerned. While all of the prominent modelling methodologies depend upon the analysis of past behaviour, they utilize different mechanisms for applying the lessons of the past to the projection of market behaviour in the future, as illustrated by the description of methodologies below. The following examples have been selected in order to provide an overview of the significant methodologies; also, each of these examples address more than one metal in question.

United States Bureau of Mines (USBM): Combination of time-trend and econometric methods

35. For many years the United States Bureau of Mines (USBM) has published long-term forecasts of metal and mineral consumption in its publications Mineral Facts and Problems and Mineral Commodity Profiles. 4/ At present, the USBM has suspended publishing these forecasts while it reviews its forecasting methodologies. In the past, the USBM forecasts have been produced on a metal-by-metal basis by dividing the consumption of each metal into its principal uses, developing equations to correlate trends to appropriate

economic indicators, obtaining projections of those indicators into the future by sources outside the USBM, applying the judgement of the metal analysts regarding the effects of technology change and metal substitution, and adding the consumption of the individual uses to arrive at the projected consumption for specific years in the future. High and low projections were also produced to bracket the range of projections resulting from variations in the judgements regarding technology change and substitution.

36. The strengths of the USBM projections were in the USBM's database of domestic and international metal consumption by end-use and the experience and professional skill of the individual metal analysts. The weaknesses were the assumption, inherent in the trend line extrapolation of consumption, that there would not be significant changes in general trends of the economy, and the independence of the projections from one another so that judgements related to technology change or substitution were not applied uniformly among commodities.

Resources for the Future (RFF): Comprehensive appraisal, including econometric modelling

37. Resources for the Future (RFF) is a non-profit research institution that was formed in response to the recommendation of the United States President's Commission on Materials in the early 1980s that an independent centre for the analysis of resource issues be established to serve the public interest. Since then, RFF has prepared numerous forecasts of the mineral requirements of the United States and the world. The modelling techniques used in these forecasting exercises were selected in recognition of the highly skilled and experienced minerals experts available to RFF, so that the forecasts would incorporate the expert judgement and experience of the forecasters into the details of the models.

38. Landsberg, Fischman and Fisher. One of the early efforts to assess systematically the outlook for minerals consumption was produced by RFF for the 1963 publication Resources in America's Future. 5/ The study focused on domestic mineral and metal needs rather than global requirements, but it served as a model for later forecasts, both domestic and global.

39. The forecasts prepared as part of this project were based on a range of assumptions about the economic conditions in the future and about the role of materials in the economy of the future. The forecasts were made for 1980 and 2000 in three scenarios: low, medium and high growth. The forecasts for copper consumption in 1980 and 2000 are shown in table 1, along with the actual 1980 value of copper consumption. In comparison with the actual growth of metal consumption, even the low growth forecast substantially overestimated the United States domestic consumption of copper in 1980. This was due, in part, to a reduction in the overall growth of the economy, but it also reflected changing patterns of copper use due to changes in manufacturing processes and in the consumption of products containing copper; this also exemplifies the difficulties of making projections.

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Table 1

United States consumption of copper

(Projected by Resources for the Future in 1963)

(million tons)

	1980	2000
Low	2.2	2.8
Medium	3.6	6.8
High	5.2	14.0
Actual	1.9	

Source: Projections from Landsberg, et al., op. cit., actual consumption from United States Bureau of Mines.

40. The forecasting technique used in Resources in America's Future was described as a "comprehensive appraisal". This appraisal used a number of techniques to arrive at its forecasts, but the most important factor was the experience and knowledge of the group of researchers preparing the forecast. The result was a forecast that was highly integrated among its components (including substitution among the various materials). The strength of the model was in the ability of the modelling team to integrate data from many sources so that it fit into a common analytic framework in spite of differences in quantity and quality of information, and to assess the implications of qualitative trends in materials production and consumption for the quantitative projections of metal and mineral consumption.

41. Fischman. In 1980, RFF published the report World Minerals Trends and U.S. Supply Problems, 6/ based on a study directed by Leonard Fischman. Consumption forecasts were based on demographic and macroeconomic projections, with considerable expert judgement about the changing relationship of materials consumption to population and GDP. As with earlier RFF studies, the 1980 forecasts supplemented the use of statistical analysis and mathematical calculation with the expert judgement of the forecasters.

Leontief: Input-output modelling

42. Analysts of the world economy gained a powerful tool with the development of the input-output model, a technique pioneered by Wassily Leontief while formulating models of the United States and world economies. Input-output modelling begins with a projection of future production of goods and services, then working backwards through the production processes to identify the inputs

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of material, labour and capital required to fulfil the production projections. The matrix of input-output relationships can be varied over time to reflect changes in technology (i.e. metal composition of products) and substitution between materials. A team led by Leontief adapted national and global input-output models to project future metal requirements up to the year 2030. 7/ These projections, which were published in 1983, included three of the four metals that may be produced from polymetallic nodules: copper, nickel and manganese. The projections are reported in table 2.

Table 2

Projected world consumption of copper, nickel and manganese

(Projected by Leontief)

	1990	2000	2010		2020		2030	
			Pessimistic	Optimistic	Pessimistic	Optimistic	Pessimistic	Optimistic
Copper * (10^6 tons)	17	24	27	31	35	43	44	58
Nickel (10^3 tons)	1,240	1,670	1,940	2,200	2,440	3,010	3,030	4,060
Manganese (10^3 tons)	23,100	36,500	38,300	44,500	47,700	60,600	59,200	81,700

Source: Leontief, et al., op. cit.

* Includes copper recovered from secondary sources (scrap).

43. The strengths of the input-output approach are in its explicit statement of economic conditions, which can be specified for alternative scenarios of future economic conditions to obtain a range of forecasts, and in its comprehensive view of world metal consumption. Its weaknesses are in the high level of effort required to develop and maintain the comprehensive world model, and the requirement that all economic and technical factors be specified for each year rather than determined internally in the model. For example, the magnitude and components of GDP must be specified for each forecast year. Also, technical change such as the substitution of aluminium for copper in automobile radiators would be accounted for by changing the element of the input-output matrix that specified the amount of aluminium and copper required to produce an automobile rather than allowing the ratios to be determined by the model itself based on the relative prices of the metals and other factors that might actually affect the substitution of one metal for the other.

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Malenbaum: Intensity of use

44. In 1973, and again in 1977, Wilfred Malenbaum approached the forecasting of mineral and metal consumption from a perspective quite different from the detailed econometric and input-output models. 8/ He separated the forecasting process into two elements: a forecast of the growth of the economy, as measured by national gross domestic products (GDPs), and a forecast of the relationship between materials usage and level of economic development as indicated by the GDP. The ratio of materials consumption to GDP was designated the "intensity of use".

45. Malenbaum's approach was based on the concept that intensity of use varies in a non-linear fashion with regard to the level of economic development, beginning at a low level of intensity for the least developed countries, rising rapidly as the countries develop and then gradually decreasing as the economies reach a mature stage so that the intensity-of-use curve has an inverted U-shape. Malenbaum's forecasting methodology was particularly useful in projecting materials consumption in countries and regions where there were insufficient data to develop reliable econometric or input-output models. It also incorporated the concept of technological change in the qualitative determination of the shape of the intensity-of-use curve, which gave it an advantage over the generally static representation of technology in previous quantitative models.

Ridker: Combined intensity of use and input-output modelling

46. Intensity of use, as applied in the Malenbaum studies, offered insights that had not been available from other approaches to consumption forecasting. In research by R. G. Ridker and W. D. Watson, the strengths of input-output modelling for the domestic economy were combined with the benefits of the intensity-of-use approach in other economies where data were much less available. 9/ This modelling system utilized a complex input-output model of the United States economy, with input scenarios determined by a set of special-purpose models that relate the state of the economy to the output of products and certain environmental-effect indicators. Forecast of materials consumption for the United States were supplemented by forecasts for the rest of the world obtained through regional GDP projections and assumptions regarding the relationship of materials consumption with GDP (i.e. intensity-of-use relationships).

47. More recently, research has been reported about the integration of intensity of use directly into the structure of econometric and input-output models. 10/ Further development along this line holds the promise of marrying the strengths of historically derived projections of consumption and structural relationships with the trend towards reduced intensity of use resulting from improved materials processing, product design and fabrication, and introduction of substitute materials.

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Other projections: banking organizations

48. While academic and government research organizations have pioneered many of the developments in metal consumption forecasting, banks and private firms also have an interest in the forecasting of markets for metal commodities. Banks in particular have extensive involvement in the minerals industry, so they have a strong interest in projecting the trends in the markets for the metals to be products from projects that they finance. Forecast of metal consumption by banks and private firms are generally developed to assist in making decisions related to investment and finance of mines and metal-processing facilities. The models and results of private banks and firms are generally proprietary and thus not subject to peer review or public scrutiny. This in no way suggests that the models are less useful.

49. World Bank. The World Bank makes projections of future demand and price of metals, essentially for the use of its loan officers responsible for administering loans to countries, in project appraisal. Out of the four minerals in which the Special Commission is interested, the World Bank carries out projections for copper and nickel. The projections extend up to the year 2000, and the projection exercise is carried out, and the results reported, every two years. 11/ In connection with the projection exercise, the mineral situation is under study continuously; there are, thus, half-yearly, quarterly, and monthly reports on the mineral situation. Econometric models incorporating supply-demand price equations are used for the purpose of projection. The results of the econometric modelling exercise are reviewed and modified, if necessary, by market analysts through the so-called Delphi method which involves incorporating opinions of experts in the field.

50. Chemical Bank. Projections of future growth of metals consumptions were made by Chemical Bank, as reported in a professional journal. 12/

Variability in projections

51. Seven recent forecasts of consumption of metals that can be produced from polymetallic nodules indicate the variability inherent in the forecasting of consumption. The long-term rate of growth for copper, cobalt, nickel and manganese for the seven forecasts is shown in table 3. There is considerable variation among the forecasts, part of which is due to the assumptions used and part is due to the structure and techniques embodied in the models. Interestingly, no single forecast produces the highest or lowest forecasts for all metals. The USBM and Leontief's forecasts are generally, though not always, the highest, and Chemical Bank and Ridker generally forecast the lower growth rates. Note that the 1985 USBM projection is more conservative than its predecessor for copper, nickel and manganese, due to the longer duration of the low growth period and increased concern of the metal analysts with regard to changes in intensity of use of the metals in the industrial economies.

Table 3

Comparison of long-term consumption growth rate forecasts

(per cent)

	USBM 1980	USBM 1985	Fischman	Leontief	Malenbaum	Ridker	Chemical Bank
Copper	3.9	2.7	3.1	4.4	2.9	2.7	2.1
Nickel	4.3	3.0	n/a	2.7	3.0	3.2	2.2
Cobalt	2.3	3.7	2.3	n/a	3.6	n/a	n/a
Manganese	2.7	1.4	2.6	4.9	3.4	0.6	1.4

Sources: See notes 4/, 6/, 7/, 8/, 9/ and 12/.

52. The variation of results of the seven forecasts of metals consumption exemplify the problems discussed earlier. In general, the factors can be divided into two groups: assumptions related to the economic climate and structural relationships between economic assumptions and the use of metals. In some models these factors are explicitly separated while in others they are intertwined.

53. As described above, there are a variety of tools that may be used to assess the outlook for future consumption of metals that can be obtained from seabed mining. Simple projections of past trends have been shown to be inadequate to the task of forecasting market behaviour in a dynamic world economy, but more sophisticated techniques have been developed to address this task. Econometric modelling was used to obtain more sophisticated forecasts by linking the behaviour of the metal markets to other factors of the economy. Input-output modelling also provided a tool to assess mineral and metal consumption under alternative economic scenarios. The introduction of the intensity-of-use hypothesis responded to the increasing importance of changing technologies and processes and their implication for the relationship between economic growth and future materials needs. Eventually, the insights of intensity-of-use analysis were incorporated into both econometric and input-output models, improving the capability of both to reflect more accurately the importance of technological change in materials consumption.

54. From the perspective of global metal projections, the type of model used matters less than the quality of data and professional judgement applied to the analysis. The best forecasts could result from the utilization of different models, each in their respective areas of strength, combined together to produce a global projection.

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55. It must be recognized that the driving force for all of the demand projection models is the forecasting of the future growth of the world economy. The economy has thus far proven too complicated for definitive forecasting, so attempts to project future metals consumption must consider a range of potential economic futures.

56. As to future supply of copper, nickel, cobalt and manganese, in the view of the analysts who regularly monitor mine expansion and development activities, supply of the metals in the near future will be able to meet demand. If anything, there is the possibility that demand in the near future will fall short of supply capacity. With respect to the medium-term future, a comparison of land-based reserves, on the one hand, and cumulative demand to the year 2000 (based on demand projections), on the other, indicate that world reserves are sufficient to meet the world demand for copper, nickel, cobalt and manganese.

III. SOURCES OF DATA AND INFORMATION ON PROJECTION OF METAL SUPPLY/DEMAND/PRICE

57. Since it appears that the most fruitful approach would be for the Authority, when it commences functioning, to monitor the metal situation and to keep abreast of trends and developments in the metal markets, contacts and exchanges of information and ideas would be extremely useful with organizations, agencies and institutions interested or involved in projection exercises. For this purpose, a number of important sources of data and information on projection of metal supply/demand/price are described below. It is not feasible to list or identify all organizations, institutions or agencies that are involved in projection or related activities; however, the following is an indicative and illustrative list.

A. International organizations

World Bank

58. The development activities supported by the World Bank often address the exploitation of natural resources. Decisions to support particular projects are based on analytic assessments, and so the World Bank supports research into the behaviour of minerals markets and the development and use of forecasting models, as described earlier. At present, the World Bank is the most active international organization in the forecasting of markets for metals. The projections of metal consumption are published in the Bank's forecasts of commodity prices and consumption as well as in individual reports on particular commodities. According to the latest biennial publication of the World Bank on world mineral projection, world demand for refined copper is projected to increase at 1.8 per cent per annum over the 1989-2005 period, and world demand for nickel is expected to grow at an average rate of 1.7 per cent per annum during the 1990-2005 period.

Organisation for Economic Cooperation and Development

59. During the period of the 1970s and 1980s when negotiations were underway to consider mechanisms to manage commodity markets, the Organisation for Economic Cooperation and Development (OECD) convened groups of experts to study the markets for many commodities, including minerals. Several Governments supported the development and use of forecasting models to evaluate metal markets and the potential efforts of commodity agreements. With the decline in attention on commodity agreements, the support for these research activities has declined sharply.

Other international organizations

60. Organizations/departments/bodies within the United Nations, especially the United Nations Conference on Trade and Development (UNCTAD), regional commissions, the Department of Economic and Social Development, and the Committee on Natural Resources are interested in the future mineral situation, and can be important sources of data and information in relation to projected supply/demand/price of metals.

International commodity bodies

61. The International Nickel Study Group, and the International Copper Study Group are expected to be good sources of information on the projections with regard to the respective metals.

International commodity institutions

62. The International Manganese Institute, Paris, and the Cobalt Development Institute, Brussels, are interested in the future market situations with regard to the respective metals.

B. Government agencies

63. Governmental agencies and offices involved with international trade or the development and management of natural resources often require statistical information and forecasts of metal supply/demand/price to support the formulation of governmental policy. Such information can be obtained from a variety of public and private sources, but larger Governments may incorporate such analytical tasks within their own agencies. As an illustrative example, Energy Mines and Resources of Canada conducts studies, and forecasts markets for copper, nickel and ferrous metals over various time horizons.

64. Another example is the Bureau of Mines of the United States Department of the Interior, which compiles statistics and analyses trends in the production, consumption and trade of non-fuel minerals, as described earlier. While the focus of the USBM's work has shifted away from long-term projections, its metals analysts prepare forecasts as needed by the United States Government. It is currently evaluating its forecasting methodology, and will consider reinstituting its publication of forecasts when it completes its evaluation.

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C. Private institutions/firms

65. The following is an incomplete, but illustrative, list of private institutions/firms that have prepared forecasts of markets and prices of metals contained in polymetallic nodules.

Brook Hunt & Associates, 19 Lincoln's Inn Fields, London WC2A 3EU, United Kingdom. It conducts studies and prepares forecasts for copper and nickel with time horizons of approximately 10 years. Reports are generally produced for clients and are proprietary in nature.

Charles River Associates, 200 Clarendon Street, Boston, Massachusetts 02106, United States of America. Charles River Associates (CRA) has been active in the development of models for metal markets for over 20 years. Their approach was largely in the development of large econometric models that were adjusted for special circumstances (anticipated changes, such as increased environmental costs). The models incorporate extensive information and judgement related to resources and reserves and production costs. Models of many metal markets, including copper, nickel and cobalt, were produced for the United States Government and were described in detail in reports, books and other publications. Currently, CRA maintains capability to forecast demand for copper, nickel, cobalt and manganese.

Commodities Research Unit, Ltd., 26 Red Lion Square, London WC1R 4RL. CRU conducts studies of copper and nickel markets with short-term (18-month) and longer-term (10-15 years) forecasts. Projections are proprietary.

Gill and Duffus, 201 Borough High Street, London SE1. It conducts studies of the market for copper, with time horizons of one month to five years.

Lehman Brothers International, One Broadgate, London EC2M 7HA. It recently produced Shearson Lehman's annual review of the world's nickel industry, 1991, predicting long-term growth of 4 per cent per year. Report findings are available at considerable cost.

Metals and Minerals Research Service, 222 Strand, London WC2R 1BA. It conducts studies of the markets for copper and nickel, with horizons extending to 10 years. Reviews of forecasts may be obtained in Metal Bulletin.

Resource Strategies Inc., 626 W. Lincoln Highway, Exton, Pennsylvania 19341, United States of America. It conducts studies of a number of metal commodities. They have the capability to forecast consumption of copper, nickel and manganese for a period of approximately 20 years.

66. In addition, some of the major metal producing and consuming industries often carry out projection exercises. For example, the Mining Journal in a recent issue reports: "Longer term, the rate of growth of nickel consumption will be linked to the level of industrial production, and INCO believes that an annual rate of 2-3% may well prove conservative". 13/

IV. CONCLUDING REMARKS

67. The above discussion highlights the usefulness of keeping abreast, in the near future, of available projections of demand/supply/price of copper, nickel, cobalt and manganese, and considering seriously the outcomes of the projected exercises at the time seabed mining appears imminent.

68. The factors behind the variability and the bias of projected outcomes become more intractable the longer the period is for which the projection is made. Thus, after the deliberations on the presentation made by an expert from the World Bank on the projection for copper and nickel markets, some of the points made in Special Commission 1 were: "(a) the degree of confidence in long-term projections is much lower than in short- and medium-term projections; (b) the mineral situation needs to be under constant study so that unforeseen developments, if any, can be spotted and their implications for long-term projections examined; (c) unforeseen developments, if sustained for a period of time, can have significant effects on long-term projections ..." (LOS/PCN/L.63, para. 7).

69. The issue of monitoring the mineral situation becomes all the more important in comparison with the study of current projections for the future 20 years from now, in view of the fact that: (a) many of the factors behind the variability of projections become more manageable in the perspectives of a foreseeable time period; (b) most of the uncertainties would play themselves out in the future and point to relatively clearer courses; and (c) the prevailing moods of the times are less likely to lead to contradictory decisions or actions.

70. These considerations moulded the approach taken by Special Commission 1, which is reflected in the provisional conclusion related to the issue of projection, of the deliberations in the Special Commission which can form the basis of its recommendations to the International Seabed Authority (revised suggestion by its Chairman). The provisional conclusion reads:

> "Provisional conclusion 2
>
> "Forecast of mineral situation with or without seabed production
>
> "The Authority should collect available data and information on future seabed mining activities in the Area as well as existing forecasts on mineral situation. The Authority should consider and comment upon those forecasts when it has authorized the first plan of work for exploitation. If necessary, the Authority could carry out its own forecasting, based on the available data, information and the existing forecasts on the mineral situation with and without seabed production, in accordance with the provisions of the *chapeau*, which would include, *inter alia*, supply-demand-price of the four metals concerned." 14/

Notes

1/ Official Records of the Third United Nations Conference on the Law of the Sea, vol. X (United Nations publication, Sales No. E.79.V.4), document A/CONF.62/RCNG/1, annex B (NG1/7), p. 28.

2/ David A. Gulley, "The new future of world metals: a conference report", Natural Resources Forum, vol. 11, No. 1, 1987, p. 70.

3/ Ibid., p. 71.

4/ United States Bureau of Mines (USBM), Mineral Facts and Problems, and Mineral Commodity Profiles, Washington, D.C., various issues.

5/ H. H. Landsberg, Leonard Fischman and F. M. Fisher, Resources in America's Future (Washington, D.C., Resources for the Future, 1963).

6/ Leonard Fischman, World Mineral Trends and U.S. Supply Problems (Washington, D.C., Resources for the Future, 1980).

7/ Wassily Leontief, James C. M. Koo, Sylvia Nasar and Ira Sohn, The Future of Non-Fuel Minerals in the US and World Economy: 1980-2030 (Lexington, Mass., Lexington Books, 1983).

8/ Wilfred Malenbaum, World Demand for Raw Materials in 1985 and 2000, National Science Foundation, Washington, D.C. (NS/RA-770421), 1977.

9/ R. G. Ridker and W. D. Watson, To Choose a Future (Baltimore, Md., Johns Hopkins Press, 1980).

10/ See Saul B. Suslick and DeVarle P. Harris, "Long-range metal consumption forecasts using innovative methods: the case of aluminium in Brazil to the year 2000", Resources Policy, September 1990; and Raymondo M. Valdes, "Modelling Australian steel consumption", Resources Policy, September 1990.

11/ World Bank, Price Prospects for Major Commodities, vol. 1, Washington, D.C., December 1990.

12/ Gerald Polio, "The outlook for major metals through the year 2000: an updated view", Journal of Resource Management and Technology, vol. 12, No. 2.

13/ "Thoughts on nickel", Mining Journal, 15 March 1991, p. 203.

14/ Informal document circulated among the members of the Chairman's Negotiating Group of Special Commission 1 at the end of the tenth session, containing "Provisional conclusions of the deliberations of Special Commission 1 which can form the basis of its recommendations to the International Seabed Authority (Revised suggestions by the Chairman)".
